DOCUMENT RESUME

ED 407 943 IR 056 344

TITLE	Local Places, Global Connections: Libraries in the Digital Age. What's Going On Series.
INSTITUTION	Benton Foundation, Washington, DC.; Libraries for the Future, New York, NY.
SPONS AGENCY	Kellogg Foundation, Battle Creek, Mich.
PUB DATE	97
NOTE	64p.
AVAILABLE FROM	Benton Foundation, 1634 Eye St., N.W., Washington, DC 20006.
PUB TYPE	Guides - Non-Classroom (055) -- Reports - Evaluative (142)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	Access to Information; Advocacy; *Case Studies; Change Agents; Computer Networks; *Electronic Libraries; Futures (of Society); Information Technology; Internet; Library Automation; *Library Development; Library Planning; *Library Role; Library Services; *Technological Advancement; Theory Practice Relationship
IDENTIFIERS	Digital Technology; *Information Age; *Technology Integration

ABSTRACT

Libraries have long been pivotal community institutions--public spaces where people can come together to learn, reflect, and interact. Today, information is rapidly spreading beyond books and journals to digital government archives, business databases, electronic sound and image collections, and the flow of electronic impulses over computer networks. Will libraries lose their role as lending institutions? What will happen to libraries as physical places where diverse people can gather to pursue knowledge individually and collectively? These research findings provide a theoretical underpinning and a practical guide for librarians, public officials, advocacy groups, community organizations, and others who seek to ensure a central role for libraries in the digital age. Section 1 describes the opportunities and challenges that new technologies present for libraries--including efforts by a wide range of organizations to help libraries fulfill their potential in the Information Age. The section also explores what steps are needed to ensure that libraries continue to serve their vital role in the new era. Section 2 presents eight detailed case studies which describe how libraries have adopted new technologies, and which can serve as models for other libraries. Section 3 presents a list of more than 100 additional resources on the role of libraries in the Information Age and samples of library programs that offer public access to new technologies. (SWC)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 407 943

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☐ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Benton Foundation &
Libraries for the Future

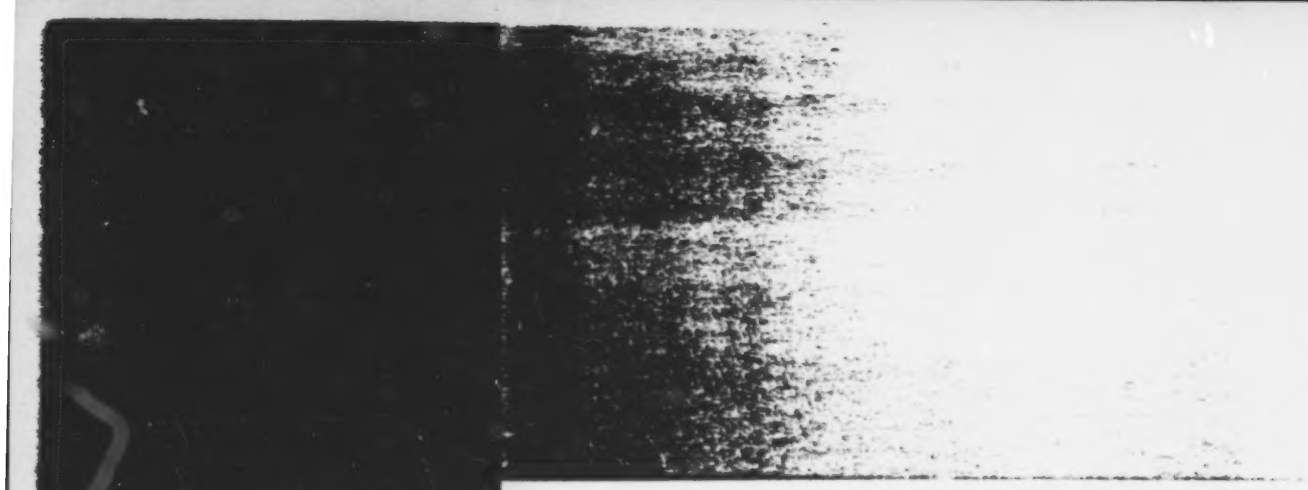
What's Going On

Local Places, Global Connections

Libraries in the Digital Age

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Andrew Blau
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

BEST COPY AVAILABLE



Local Places, Global Connections is a collaboration of the Benton Foundation and Libraries for the Future, who share a belief in libraries as vital community institutions in the digital age.

Benton Foundation
communications in the public interest

Benton Foundation

The Benton Foundation's Communications Policy Project promotes public interest values and noncommercial services for the National Information Infrastructure through research, policy analysis, print, video and online publishing, and outreach to nonprofits and foundations. Its website contains updates on communications policy and upcoming events; a forum for discussion; publications such as bulletins, policy briefings, and working papers; and links to hundreds of online communications and public interest resources. Benton carries on its website the text of the Kickstart Initiative, a compendium of case studies and recommendations on how to start an initiative to connect schools, libraries, and community centers to the Internet and other advanced telecommunications technologies. Kickstart was compiled by the U.S. Advisory Council on the National Information Infrastructure.

LIBRARIES *for the* FUTURE

Libraries for the Future

Libraries for the Future is a national nonprofit organization of public library advocates. LFF educates and activates current and potential library users to become advocates and works to enhance the relationship between libraries and communities—particularly those with limited resources. The LFF program promotes community participation and universal access to literacy, lifelong learning, and information—essential tools for democracy.

The *What's Going On* series is a part of the Benton Foundation's Communications Policy and Practice project. The series is made possible with funding by the W. K. Kellogg Foundation, the John D. and Catherine T. MacArthur Foundation, the Charles Stewart Mott Foundation, and the Carnegie Corporation.

Local Places, Global Connections and other educational tools LFF provides to its National Library Advocates Network are made possible with funding by the W. K. Kellogg Foundation, Universalist Unitarian Veatch Program at Shelter Rock, and the Council on Library Resources.

Photo credits: *cover top & bottom* ©1994 PhotoDisc; *cover center* Terry Collins, Seattle Public Library; *section one* ©1994 PhotoDisc; *section two top* ©1994 PhotoDisc; *section two center* Terry Collins, Seattle Public Library; *section three* ©1994 PhotoDisc.

Benton Foundation &

Libraries for the Future

Local Places, Global Connections

Libraries in the Digital Age

©1997 Benton Foundation and Libraries for the Future

Designed by Tilly Northedge, Grundy & Northedge, London; edited and produced by Communications Development Incorporated, Washington DC.

Contents

Page no.

iv **Preface: Of libraries and communities**
By Jorge Reina Schement, associate dean for graduate studies and research/professional development and professor of communications, Pennsylvania State University.

vii **Introduction**

2 **An overview of technology and libraries**
New telecommunications technologies are changing the way libraries provide information to the public and interact with their communities. These changes, while offering an incredible potential for library/community development, will require an expansion of resources to be fully realized.

The vision: opportunities and synergies
Technology is giving libraries new ways to bring focus and order to today's overwhelming supply of information. It also is giving them powerful tools to augment their traditional role as community-building institutions.

What's going on
Government agencies, library organizations, and private corporations are supporting efforts to enhance the digital capabilities of libraries and help them serve patrons and communities. And librarians are assuming an important role in policy debates on such issues as universal service, censorship, and the structure of the telecommunications system.

What's needed
Fewer than half of all public libraries are connected to the Internet, and many offer access only for library staff, not patrons. Diverse partners—ranging from government agencies and schools to businesses and nonprofit groups—must join the effort to bridge this gap. At the same time, librarians must be better trained to develop vital information-age skills and teach them to others.

Page no.

Profiles in connectivity 14

Eight profiles demonstrate how some libraries are taking advantage of technology to forge new community relationships, reach new library users, and enhance the role of the library as a community information resource center.

• California: Internet For People (InFoPeople) • Vermont: Vermont Automated Library System (VALS) • Nebraska: Nebrask@ Online • Michigan: Flint Community Networking Initiative • North Carolina: Charlotte's Web and the Public Library of Charlotte and Mecklenburg County • Washington: Technology Center at the Seattle Public Library • Pennsylvania: Carnegie Library of Pittsburgh • New Mexico: La Plaza Telecommunity

Additional resources 42

A list of more than 100 useful sources on the role of libraries in the Information Age and samples how libraries are offering public access to new technologies.

Preface:
Of libraries and communities

by Jorge Reina Schement

My library
Was dukedom large enough.
—Shakespeare, The Tempest *(1610–11)*

Books constitute capital. A library book lasts as long as a house, for hundreds of years. It is not, then, an article of mere consumption but fairly of capital, and often in the case of professional men, setting out in life, it is their only capital.
—Thomas Jefferson to James Madison (September 1821)

Prospero's appeal to Miranda stands as one of literature's great statements of identity. In the midst of his divulgence of Antonio's faithlessness, Prospero describes himself as a man of letters, of virtue, and of character by selecting one word—library. Two centuries later, the old conspirators, Jefferson and Madison, are laying the foundations of the country they helped create by discussing every new available resource. Jefferson expresses his practicality with assurance. But, like Shakespeare, he evokes a deeper sensibility.

Today, while we readily share Jefferson's presupposition that information is power, we live in a world where the boundaries of that power are rapidly shifting. The nature of the new society and the role to be played by libraries is shaping up into one of the great debates of the Information Age, for most Americans now recognize the importance of information as a vast resource. But this is not cause for celebration for those who value the library's role in American life, for more than at any other time in this century, Americans look to the home, rather than the public library, to meet their information needs.

There can be little doubt that we have entered the Information Age. But to understand its course requires thinking beyond libraries or any single institution. There are deeper social forces at work.

The shift in the emphasis of daily life from the public sphere to the private sphere, the decline of community, and the consequent disconnection from family and group are already influencing the role to be played by libraries. Americans are rushing to furnish their homes with a host of devices for communicating, receiving, and processing huge quantities of information through diverse media across multitudes of channels. (If you lift the roof from the typical American home it looks like a multiplex theater.) What once took place in the town square, the neighborhood tavern, in the marketplace, or the library now occurs more often in the study or in the bedroom. The locus of communication and participation is shifting from the public sphere to the private sphere.

But to accomplish this Americans have created a context where information enters

the home as a fragmented stream of unconnected messages stripped of their social context, as separated bits without organic unity. To spend a day with one's TV and radio, wading through a pile of newspapers and magazines, and cruising the Internet, is to spend a day processing an enormous number of messages—but not necessarily to be informed.

The shift from public space to private space threatens older forms of community. In states like New Jersey, polls show that more Jerseyans know the names of the mayors of New York and Philadelphia than the mayors in their own towns. Though regions vary, this seems to be a characteristic of the American political landscape and what it tells us about the nexus between information and community. Large media networks collect audiences by concentrating on stories that appeal to large blocks of viewers and readers. Therefore, suburban and rural citizens are more likely to recognize the name of a city official for whom they can't vote. Individuals who commute to distant workplaces and whose personal networks are spread geographically are further disconnected.

Democracy in the United States began in local communities. That it has become increasingly meaningless to so many Americans signals a profound social change, and public libraries are beginning to feel the impact. Throughout its long history, the public library thrived upon the largely hidden foundation of community. As long as community remained intact, libraries (and churches and schools) functioned to bring people together, to educate immigrants, and to reinforce the virtues of citizenship. If the decline of community moves us away from the democratic ideal of informed public participation as it was imagined by the founders, what can librarians do to ensure that the communities of the future will reinforce the civic virtues necessary for the United States to realize its third century of democracy?

As the information society evolves away from the traditional notion of community, librarians face challenges because of our diminshed sense of place and our eroding appreciation for what is local. Increasingly Americans live in a society where individuals conduct their daily lives among strangers or approximate strangers: the grocery clerk, the dry cleaning attendant, the security guard at the entrance to their office building, most of their fellow employees, and the teleclerks for the catalogs through which many purchase a vast array of goods. Americans live daily life amid impersonal interactions. And many, if not most, of these are mediated through some form of communication technology.

This is not to say that individuals have lost the bonds of kinship to family, neighbors, and fellow workers, but the balance has shifted dramatically. For though people maintain a small number of primary personal relationships, the number of secondary anonymous relationships has vastly increased as individuals seek to accomplish tasks by relying on mediated information received from strangers. Online technology, combined with Americans' willingness to trust strangers, has created a primary industry of information access and distribution—the new glue holding together our new society. As Americans carve out person-centered, individualistic, information-heavy approaches to daily life, they are bypassing the library. Librarians who pride themselves on the personal nature of the reference relationship will have to contend with the tendency of Americans to seek information from distant electronic sources, thereby diminishing their traditional dependence on the neighborhood library.

The historical moment for librarians is both pregnant with opportunity and fraught with uncertainty. Information overload leads to frustration, which, in turn, leads to individual demand for more information technologies; hence, a tautological demand cycle becomes a long-term trend. Clearly, Americans will need further assistance to cope with the daily stream of information, and librarians—who have been organizing information for cen-

turies—may, if they wish, seize the moment. But the growing emphasis on the private sphere at the expense of the public appears to be affecting appreciation for the role of the library. It may well be that the greater the investment Americans make in the home as a center for information processing, the less likely they will be to subsidize the public library. Librarians find themselves navigating between the Scylla and Charybdis of this transition, put at risk as much by the growing investment in the private realm of the home as the withdrawal from the public sphere of the library.

Now they find they are not alone. To the relief of the pessimists and to the elation of the optimists, patrons and supporters of libraries have stepped forth to help with the navigation. A quick tabulation of the grants identified in this volume indicates that approximately $50 million are in the pipeline and more are to come. This is good news. Moreover, the authors, themselves representatives of this wave of public support, bring together cases and exemplars from the field. Not only have a diverse group of supporters offered a significant amount of financial support, but there is evidence here of what works.

First and foremost, the real transition is local, but its implications are global. So, for those of us who follow the national debate, we must know what is going on in a panoply of communities that adorn the geographic and cyber landscape. The focus of these reports on actual experiences goes a long way toward helping us understand what is possible and which directions offer the greatest promise. Much is being tried and much succeeds. True, the lessons presented here raise as many questions as they answer. For this we should be grateful, because these questions move public discourse forward and prompt us to think beyond our current boundaries. Again, the news is good.

Yet, if so much capital is being invested in libraries, why do we who treasure libraries feel so uncertain? In a sense, the answer can be found in the investments themselves. Money is being spent to grapple with technical challenges in projects experimenting with new technological applications, seeking more cost-effective levels of efficiency, or exploring new avenues for meeting the needs of new—and old—clients. These efforts contain value of the utmost significance.

Where we lag is in our understanding of the evolving social context—a context in which libraries will have to justify themselves. There is an irony here. With more investment than libraries have experienced since the turn of the century, the broad legitimacy of libraries remains in doubt. Librarians must struggle with public support that is a mile wide and an inch thick. Youth, the ones who will be asked to support libraries in the future, do not appear as deeply committed to libraries as their parents and grandparents. So there is cause for angst.

Of the current wave of support for libraries, we should take note of one theme in particular—nostalgia. The sentiments in Shakespeare's poetry and Jefferson's letter to Madison stir those of us who embrace an abiding love for the idea of the library—we who believe the reading room of the Library of Congress represents the innermost circle of knowledge and who can still recall the smells of the books in our first public library. For many like us, the entrance of a Carnegie-style library triggers images of participatory democracy, immigrant aspirations, and small-town community.

This may be the world of Marian, madame librarian. Yet, however charming this view of libraries, we should remind ourselves that it is not the world that we are entering. The question, "What will happen to libraries?" has a larger context, for we as a nation find ourselves asking the same of universities, of public media, of religious institutions, and of government's social mandate. Each of these questions, in turn, derives from an even more basic question: "How will Americans live their lives as citizens, as economic actors, and as social beings?" These, after all, are the great questions of the twenty-first century, and they constitute our challenge. It is my fervent hope that when our distant descendants read the literature of the twenty-first century they will find references to libraries of the power of Shakespeare's and Jefferson's. Whether they will or not depends on our efforts today.

Introduction

Libraries have long been pivotal community institutions, public spaces where people can come together to learn, reflect, and interact. But today, information is rapidly spreading beyond books and journals to digital government archives, business databases, electronic sound, image, and film collections, and the flow of electronic impulses over computer networks. Will libraries lose their role as lending institutions? And what will happen to libraries as physical places where diverse people can gather to pursue knowledge individually and collectively?

The Benton Foundation and Libraries for the Future have spent the last two years seeking answers to these questions. In 1995 the W. K. Kellogg Foundation commissioned Benton to collect and analyze statements from libraries and library organizations concerning their visions for the role of libraries in the Information Age. At the same time, Libraries for the Future began looking closely at how some libraries have started using new technologies to build on their traditional roles both as equal-access gateways to information and as public institutions.

These research findings provide a theoretical underpinning and a practical guide for librarians, public officials, advocacy groups, community organizations, and others who seek to ensure a central role for libraries in the digital age. This work reflects a conviction that libraries are uniquely suited to make the benefits of new information technologies available to everyone, regardless of economic status or place of residence; to bring focus and organization to the often bewildering and ever-expanding universe of information; and to counter the centrifugal forces of modern life by nurturing community, civic engagement, and democratic traditions.

Section 1 describes the opportunities and challenges that new technologies present for libraries—including efforts by a wide range of organizations to help libraries fulfill their potential in the Information Age—and explores what steps are needed to ensure that libraries continue to serve their vital role in the new era. Section 2 presents eight detailed case studies describing how libraries have adopted new technologies. These examples, prepared by Jamie McClelland of Libraries for the Future, could serve as models for other libraries. Section 3 presents additional resources for those interested in pursuing these issues in greater depth.

LFF would like to thank the following technology working group members: Ann Bishop, University of Illinois at Urbana-Champaign; Andrew Blau, Benton Foundation; Steve Cisler, Apple Computer, Inc.; Jamie Cooper; Joan Durrance, University of Michigan; Luis Hernandez, Newark Public Library; Nancy Kranich, Elmer Holmes Bobst Library; William Hollands, New York Public Library; Andrew Magpantay, American Library Association; Kaushik Mukergee, Public Allies; Paul Peters, Coalition for Networked Information; Karen Schneider, EPA Region II Library; Jorge R. Schement, Pennsylvania State University; Willem Scholten; Steve Snow, Charlotte's Web; and Peter Young, National Commission on Libraries and Information Sciences.

one

An overview of
technology and libraries

BEST COPY AVAILABLE

An overview of technology and libraries

The vision: opportunities and synergies

Amost 45 percent of all U.S. public libraries are connected to the Internet—although the extent to which they provide public access varies widely. While connecting the rest will be a challenge, those that have made the leap show that it is worth the effort. They are tapping into vast new stores of information, and in the process they're adding value to that information in numerous ways.

Building and enhancing collections

Libraries must go digital just to keep pace with the hundreds of journals and newsletters that are becoming available online. Directories like NewJour (gort.ucsd.edu/newjour/) and E-Zine-List enumerate this rapidly growing complement to traditional publishing.

Some of these electronic journals are being produced by established publishers. At Johns Hopkins University, for instance, Project Muse (muse.jhu.edu/) is digitizing all journals of the university press and making them available by electronic subscription. Other electronic journals are offering an outlet for nonprofit groups that traditionally have had trouble finding print publishers. HighWire Press (highwire.stanford.edu/), for example, is beginning to work with nonprofit publishers. Its initial projects include Science Online (science-mag.aaas.org/science/) and the Journal of Biological Chemistry Online (www-jbc.stanford.edu/jbc/). The federal government is rapidly converting to an electronic publishing and distribution system—the Electronic Federal Depository Library Program Transition Plan (www.nal.usda.gov/acq/eplan.htm). State governments as well are looking at the possibilities of handling their documents differently.

Technology can also make collections more accessible. The Cleveland Public Electronic Library (www.cpl.org/), for instance, uses the Internet in providing a variety of information services. In particular, through the World Wide Web it provides access to its Public Access Catalog, networked CD-ROMs, local Cleveland information, and electronic issues of magazines like the *Atlantic Monthly* (www.theAtlantic.com/). New computer tools can help in analyzing data. Geographic Information Systems can now be used with standard web tools to present data about environmental, land use, and other matters on a map, making it easy to visualize the impact of community and business resources and decisions.

Librarians can use computer tools to evaluate the expanding universe of knowledge and select what is reliable and relevant to the needs of individuals and communities. This helps make information manageable, so that individuals can better judge and use it.

As a first step toward bringing order to the chaos of Internet information, the Internet Public Library (ipl.sils.umich.edu/), developed by the University of Michigan School of Information and Library Studies, has created guidelines for choosing Internet reference materials. IPL's "ready reference" selection policy meets a need familiar to anyone who uses the World Wide Web. While the web can vastly increase our access to information by automatically linking us to innumerable other Internet publishers, how do we assess the quality and reliability of these other sources? IPL sets standards for Internet publishers to use in establishing links to other publishers. It recommends linking only to materials that "are high in useful content, preferably those which provide information in their own right rather than simply providing pathways to information; are updated consistently; provide text-only interfaces for non-graphical browsers; show evidence of having been proofread carefully; and contain only live links to documents which are as relevant as the primary document." This service could be valuable to Internet users as well as publishers. Resources that are selected as "ready reference" sources display an "IPL Ready Reference Source" graphic—a sort of Internet seal of approval.

New technologies enable libraries to serve a wider variety of users by making it possible to carry all kinds of mediums—text, sound, and pictures—in one digital form. That doesn't mean, however, that print will disappear, or that libraries will cease to have value as a place for people to browse through books and conventional periodicals. In interviews with the Council on Library Resources, the staff at the Public Library of Charlotte and Mecklenburg County in North Carolina (www.plcmc.lib.nc.us/) describe their library as "stepping over a stream," with one foot placed firmly on each bank. On one bank are valued traditional services; on the other is a leading role in the new age of technology (www.sils.umich.edu/CLR/).

Strengthening communities

Beyond their role as repositories of information, libraries have long been community centers. While some librarians worry that the digital age has eroded this part of the library's identity, others see a continuing role for libraries in helping people tap the unlimited community-building promise of the new technologies.

Known as freenets or civic nets, these networks are dedicated to making computers and electronic information available to everyone for free or a nominal charge. By allowing people with home computers to dial up a central computer, community networks offer individuals easy access to information about their communities. They also allow the public to read or post their own messages on electronic bulletin boards, usually at little or no cost. Some community networks even provide email addresses, so that individuals can communicate directly with each other.

But community networks—which are nonprofit operations often run by volunteers—can't reach people without home computers or modems. And, as Steve Cisler, senior scientist at the library at Apple Computer, Inc., notes in *Can We Keep Community Networks Running?* (sunsite.unc.edu/cmc/mag/1995/jan/cisler.html), they lack stable funding and face competition from other businesses and organizations with more resources.

Libraries make natural partners for community networks. They offer a familiar and trusted physical space where public access terminals can be located, and they have a wealth of knowledge about community information needs. And library-community network partnerships could be an answer to the financial threat faced by both institutions.

When libraries and community networks form partnerships, the potential for additional collaborators increases tremendously. In Charlotte, North Carolina, for example, the Public Library of Charlotte and Mecklenburg County (PLCMC) teamed up with Charlotte's Web, a local community network. Through this collaboration, Charlotte's Web forged many additional partnerships with other local organizations, including the

Charlotte-Mecklenburg school system, Johnson C. Smith University (an historically black university), Central Piedmont Community College, and WTVI-Channel 42, the only community-owned public television station in North Carolina.

"Technology is helping to define a new community and new connections among people within the community," says Steve Snow, the director of Charlotte's Web. "It is also providing an opportunity for the library to assert a very real leadership role within the community at large—a role that had become moribund during the 1970s and most of the 1980s. . . . The community network in Charlotte delivers information, creates information, and shares information."

The public has responded warmly. The Council on Library Resources found users in Charlotte eager to talk about their own needs for information and how the public library was meeting those needs. They said networking efforts improved the public education system and created new opportunities for self-enhancement, learning, career advancement, and civic involvement. The Council has published the findings of site visits to public libraries, including interviews with library staff, user groups, and community leaders, on its website (www.sils.umich.edu/CLR/clr.html).

The partnership between Charlotte's Web and the PLCMC is only one of many around the country. In each case, partnerships have leveraged additional partners with other community groups. Other examples are described at the University of Michigan School of Information's Community Networking site, assembled by Joan Durrance (www.si.umich.edu/Community/).

Many libraries have taken advantage of technology to foster community relationships without using the community networking model. In Seattle the Internet has allowed for a creative collaboration. People for Puget Sound helps local people learn about the Puget Sound ecosystem and mobilizes them to become committed stewards of the sound. In 1994 they approached the Seattle Public Library (www.spl.lib.wa.us), one of the first public libraries to have Internet access, and asked to partner in maintaining a "Green Gopher," available through the library's main catalog.

Since then the library has established an Environmental Information Center listed on the library's website, which has several links to other websites. Under the "local" section, links represent a range of Seattle resources. People for Puget Sound (www.pugetsound.org/) has created a website that includes a calendar of events, a directory of local institutions that can help people learn more about the sound, articles and updates on current and past Puget Sound environmental issues, and a list of volunteer opportunities. Teaching Resources for Environmental Education (TREE) (coehp.idbsu. edu/GLOBE-ID/teachingtree.html) was established by Seattle's Department of Housing and Human Services in order to connect people of all ages to the range of environmental education opportunities available throughout the Seattle area. It includes an extensive list and descriptions of educational resources with contact names, phone numbers, costs, and addresses. Additionally, there are links to the City of Seattle's Public Access Network, the Puget Sound Green Pages, and the Thornton Creek Alliance websites. The Environmental Information Center page also lists governmental and more global, nongovernmental links.

After visiting the PPS website and learning about what fish live in the sound, web surfers can go to the U.S. Fish and Wildlife Service website, which includes descriptions of endangered species. Or, after reading an article about dioxin and its effect on the sound's ecosystem, a link to the Agency for Toxic Substances and Disease Registry or to the U.S. Environmental Protection Agency Region 10 can provide information on local sources of dioxin, government policies affecting dioxin dispersal, the health risks of dioxin, and the industries that produce it. Links also connect the job seeker to the Environmental Careers Organization, and persons concerned with "Sound" investment to the Greenmoney Journal. Networks and search engines, such as Econet and Envirolink Network, open up even more possibilities.

Four terminals sit outside the Environmental Information Center, and the library is working on finding funds to set up a dedicated terminal inside the center on which pertinent CD-ROMs and Internet software can be loaded. To increase use, the staff offer a course on environmental Internet resources in the library's Community Learning Lab, a teaching center with 16 computers.

What's going on

Government agencies, library organizations, and private corporations are supporting efforts to enhance the digital capabilities of libraries and services for patrons and communities.

Digital libraries initiatives

Federal agencies like the National Science Foundation, NASA, and the Advanced Research Projects Agency (ARPA) have provided $24.4 million in grants to six universities for research and development of new approaches to creating and managing digital libraries. The *Chronicle of Higher Education* explained the rationale behind this research (November 10, 1995): "It's one thing to be able to find something in a relatively small, well-defined digital collection, but it's far more complicated to find it in the vastness of cyberspace." The *Chronicle* continued:

> *Internet users familiar with the WWW and its assortment of rudimentary 'search engines' know how frustrating it can be to determine whether information they need actually exists. Often their queries bring too little information or a lot more than they can reasonably use—and much of it irrelevant.*
>
> *[S]ix university projects are aiming for much more sophisticated searches of much larger databases. If their theoretical work pays off, project leaders say, enormous collections of text, graphics, sound, and even full-motion video eventually could end up on a wide range of interconnected networks—just waiting for the right set of keystrokes and mouse clicks to bring them to life for students, teachers, and other travelers on the information superhighway.*

The projects include:

- Carnegie Mellon University Informedia research initiative (fuzine.mt.cs.cmu.edu/im/informedia.html): Integrated speech and video.
- Stanford University Digital Libraries Project (diglib.stanford.edu/diglib/): Easy to use interfaces and information navigation.
- University of California, Berkeley, Digital Library Project (elib.cs.berkeley.edu/): Massive databases of photographs, satellite images, videos, maps, and full text documents.
- University of California, Santa Barbara, The Alexandria Project (alexandria.sdc.ucsb.edu/): Images and spatial mapping information.
- University of Illinois at Urbana-Champaign (www.uiuc.edu/): Interlinked documents and databases that will scale to larger applications.
- University of Michigan School of Information (http2.sils.umich.edu/): Earth and space sciences information for different kinds of users, from high-school students to advanced researchers.

Andrew W. Mellon Foundation: Journal Storage Project

Since early 1994 the Andrew W. Mellon Foundation (www.mellon.org/) has been working on a project commonly referred to as JSTOR (www.mellon.org/jstor.html) designed to provide online electronic access to scholarly journals. The objectives include:

- Creating faithful electronic replications of back issues in order to preserve them
- Improving access to journal literature by linking bitmapped (fax-like) images of journal pages to search engines
- Providing access to more complete sets of journals than, in many instances, now exist on the library shelves of particular campuses
- Addressing some of the vexing economic problems of libraries by easing storage problems
- Saving the capital costs involved in building more shelf space
- Reducing costs associated with retrieving and reshelving back issues.

During the next three to five years the foundation expects to invest heavily in scholarly communication, giving special attention to the implications of electronic technologies for publishing, conserving, and making scholarly materials more readily available.

Apple Library of Tomorrow

The Apple Library of Tomorrow program (www.research.apple.com/research/proj/alot/alot96.html) has sponsored the development of several Internet sites related to preserving and distributing knowledge and information. The Oneida Nation (oneweb.org/oneida/), the UCR/California Museum of Photography (www.cmp.ucr.edu/default.html), and others have used Apple technology.

American Memory (lcweb2.loc.gov/amhome.html) consists of collections of primary source and archival materials relating to American culture and history. These collections are the Library of Congress's main contribution to the national digital library. This project was initially supported in part by a grant from the Apple Library of Tomorrow program.

The National Digital Library Federation

On May 1, 1995, the Commission on Preservation and Access brought together 12 large university research libraries, the Library of Congress, the National Archives and Records Administration, and the New York Public Library to establish the National Digital Library Federation. The federation's purpose is to explore the broad questions of combining traditional library services with the digital environment. One goal is to develop a distributed, open digital library accessible across the global Internet. IBM Corporation has provided a $100,000 planning grant. For more information, consult the commission's site (www-cpa.stanford.edu/cpa.html).

MCI LibraryLINK

MCI LibraryLINK (www.librarylink.com/) is a three-year community partnership between MCI and the American Library Association. MCI will donate $750,000 in financial and human resources from 1995 through 1998 to help advance the technological capabilities of the nation's public libraries. More than 24 public libraries will receive MCI LibraryLINK grants over that period. MCI LibraryLINK grants seek to integrate communications technology to enhance the link between local libraries, the communities they serve, and the vast resources of the information infrastructure. The MCI

LibraryLINK project is administered by the Reference and Adult Services Division of the American Library Association. Project examples include:

- Sacramento Public Library: Explore the Internet from a child's point of view on multimedia computers in Kid's Place.
- Albuquerque Public Library: Students in more than 60 public schools in rural and disadvantaged areas have dial-in access to the library's online catalog through dedicated phone lines.
- Phoenix Public Library: The library's computerized catalog—VALLEYCAT—stores information on more than 1.9 million books and library materials. Users can now look up local economic developments at 12 branch locations with help from the library and the Phoenix Chamber of Commerce.

Microsoft Libraries Online!

The American Library Association and Microsoft announced Libraries Online! (www.librariesonline.org/) in November 1995. This project started as a $3 million, one-year pilot project that enabled nine public libraries to test multimedia technology, software applications, and ways of providing public access to the Internet—particularly to underserved populations in urban and rural areas. The participating library systems serve low-income communities and/or are leaders in implementing networked and other digital technologies for their users.

In October 1996 Microsoft announced that it was expanding this program, contributing $10.5 million in financial and technical assistance and software to 41 library systems. Library systems receiving grants include the Boston Public Library, Carnegie Library of Pittsburgh, the Nebraska Library Commission, the Cherokee Tribal Library in Tahlequah, OK, and libraries in Toronto, Ottawa, and Vancouver (www.microsoft.com/corpinfo/press/1996/Oct96/lol.htm). Microsoft is also building on its initial pilot project by providing additional funding to the nine original participating library systems to expand their programs.

National Telecommunications and Information Administration's Telecommunications and Information Infrastructure Assistance Program

Federal funding through the National Telecommunciations and Information Administration's Telecommunications and Information Infrastructure Assistance Program (TIIAP) has added greatly to the momentum of libraries connecting to the Internet and other advanced telecommunications services. TIIAP has provided funding, mentoring, support, and analyses to state and local governments and nonprofit institutions (www.ntia.doc.gov/tiiap/).

Created to promote the public availability of advanced telecommunications and information technologies, TIIAP provides matching grants to state and local governments and nonprofit entities. Grants are awarded after a competitive merit review process and are used to fund projects that improve the quality of, and the public's access to, education, health care, government services, and economic development.

In the 1994 awards round, five grants totaling $1.85 million went to libraries. An additional 27 community information grants totaling $7.4 million were awarded, as well as four public information grants totaling $594,850.

In the 1995 awards round, eight grants totaling $1.5 million went to libraries. There were 28 grants totaling $8.4 million for community networking, and seven grants totaling $3.1 million for public and government information projects. Because most of these projects involve partnerships among different types of organizations, the catego-

rization may not indicate the full scope of each project. For example, a community information project may address health and education issues as well.

The Denver Public Library ($524,492) and the New York Public Library ($500,000) were among the 67 grant recipients in 42 states and the District of Columbia selected in the 1996 TIIAP program. More than a dozen other libraries are also involved in partnerships with other organizations.

W. K. Kellogg Foundation

The W. K. Kellogg Foundation is examining the application of new information technologies to strengthen communities and enhance democratic decisionmaking. The foundation's program for Human Resources for Information Systems Management (HRISM) has funded three interrelated efforts:

- Reforming professional education: Grantees include the University of Michigan-SILS, Drexel University, Florida State University, the University of Illinois, and National Video Resources, Inc.
- Redefining community library service: Grantees include Crotched Mountain Rehabilitation Center, the New York Public Library, the Library of Congress, the University of Michigan M-Link, American Documentary, Inc., La Plaza Telecommunity Foundation, the Urban Libraries Council, and the American Library Association.
- Strengthening the voice of information professionals and public libraries in policy dialog: Grantees include the Council on Library Resources, the American Library Association Office of Information Technology Policy, Benton Foundation, Harvard University, and the Center for Strategic Communications.

Principles for the Development of the National Information Infrastructure

Representatives from 15 national library and information associations met September 8–10, 1993, in Washington DC to discuss critical national policy issues dealing with the Internet and related telecommunications technologies. The group agreed on the key principles and questions that must be used to guide the development of plans for the evolution of the National Information Infrastructure (www.ala.org/oitp/principles.html). Libraries, they agreed, will play several key roles: as providers and consumers of information, as public access points, and as institutions responsible for protecting the public interest in access to information.

The principles—which will be useful tools in shaping and testing policy ideas—include a strong defense of the First Amendment and intellectual freedom, urging the adoption of policies to maintain privacy, protect intellectual property, and promoting the availability of information and equitable access to it. In addition they strongly recommend that design of the National Information Infrastructure "facilitate two-way audio, video, and data communication from anyone to anyone easily and effectively." (For more information, see the American Library Association's website: www.ala.org)

What's needed

Although the percentage of public libraries connected to the Internet nearly doubled in one year—up to 45 percent in 1995 from 25 percent in 1994—that still leaves more than half of the 9,000 public libraries in

the United States without access. This despite the demonstrated benefits of connection to the Internet. The proportion of public libraries connected varies widely by the population served—from 31 percent of libraries serving areas with less than 5,000 people to 92 percent in areas with populations over 1 million. But even many libraries that are connected don't provide full access. Of the 468 public libraries serving populations of 100,000 or more (the libraries that serve more than 57 percent of the U.S. population), 94 percent offer Internet access to library staff, but just 52 percent offer access for patrons with a staff intermediary, and only 49 percent offer Internet access directly to patrons. Modem access to the Internet from outside the library is available through just 25 percent of these libraries, according to the American Library Association website (www.ala.org/library/fact26.html).

Many libraries don't even have online public access catalogs, the Online Computer Library Center (www.oclc.org), or network connections to other libraries. Without a basic communications and information technological capability, these libraries cannot begin to take advantage of new opportunities.

Help is on the way, though. In *Connecting the Nation* (www.ntia.doc.gov/connect.html), the National Telecommunications and Information Administration asserts:

> *Public libraries can play a vital role in assuring that advanced information services are universally available to all segments of the American population on an equitable basis. Just as libraries have traditionally made available the marvels and imagination of the human mind to all, libraries of the future are planning to allow everyone to participate in the electronic renaissance.*

Accordingly, the Telecommunications Act of 1996 singled out libraries, along with schools and hospitals, as priority institutions to be connected to advanced telecommunications services. The Clinton administration has made a commitment to link these institutions to the National Information Infrastructure by the year 2000. "We must do this," Vice President Albert Gore Jr. says, "to realize the full potential of information to educate, to save lives, provide access to health care, and lower medical costs."

But how? Despite the federal commitment, Washington cannot achieve this ambitious goal on its own. The solutions will need to come from a variety of sources. Nonprofit service organizations, including community medical centers and homeless shelters, churches, community and cultural centers, public computer access centers, cable access providers, student groups, arts organizations, alternative media outlets, public schools, community activist organizations, environmental groups, and teachers—as well as individual library users—all have a role to play.

"We, as the library, are just one of the many parts that make up the community, which includes the school system, churches, community organizations," says Willem Scholten, former director of the Seattle Public Library's Center for Technology. "We have to solve [telecommunications problems] as a collaborative unit."

Successful partnering agreements have included library funding, grants, gifts, corporate partnership and contributions, government funding, university or college support, nonprofit organizational funding, and—in some instances—revenue through subscriptions and fees. "There's an opportunity for public and private dollars—not just federal dollars, not just local tax dollars, but public and private partners," says Bob Croneberger of the Carnegie Library of Pittsburgh.

A project involving the San Francisco Public Library illustrates the wide range of partners that can be brought together on information technology projects. CityLink, a joint effort involving the library, public broadcaster KQED, San Francisco State University, cable channel 54, the Exploratorium (a collection of interactive exhibits housed in San Francisco's Palace of Fine Arts), and the Well (a computer network) will provide full Internet access to the public for free. The library received a $425,000 federal grant last year to implement the project and has also received money from the Corporation for Public Broadcasting and a private library foundation (www.lff.org/technology/modlibaf.html). CityLink will use 400 terminals in 27 library branches, through remote access (dial-in, telnet, and World Wide Web) and public access centers within schools, public housing, and other public facilities.

Often the context for partnering with the library's connection to the Internet and other advanced telecommunications services is part of a higher level interest in building a city- or state-wide telecommunications infrastructure. Government and business investment can contribute to startup and long-term financial health.

Networking and library advocates miss something when they focus on infrastructure and access alone, however. Libraries should be at the center of efforts to develop new information tools and databases. That means, among other things, that technology experts must collaborate closely with librarians as they develop the software and hardware that supports information handling, storage, use, and networking.

In addition, it is important that businesses, government agencies, nonprofit groups, and community members consider how to make the information they produce available in ways that complement the libraries' role in making information meaningful and useful.

Finally librarians and others interested in propelling libraries into the digital age must engage in the broader debate over the nation's information future. A top priority should be to ensure that whatever information infrastructure is built allows two-way communication. Libraries also have a stake in policies and legislation that define intellectual property, copyright, fair use, privacy, ubiquity, equitable access, and interoperability—all of which are crucial to the future of authoring and scholarship.

More immediately libraries have a great deal at stake in decisions surrounding implementation of the Telecommunications Act of 1996, especially provisions on universal service and the so-called Communications Decency Act.

Universal service is a policy designed to ensure that certain basic telecommunications services are made widely and inexpensively available to everyone. Under the new law, the Federal Communications Commission must spell out which services should be covered and then determine what to require of telecommunications companies to achieve universal service. In addition, the law identifies libraries, along with schools and health care providers, as institutions entitled to special discounted rates for advanced telecommunications services.

Many nonprofit groups have joined together to urge the FCC to adopt the broadest possible definition of universal service. Within the library community, Libraries for the Future is urging national and local organizations to form coalitions to press the case. The Benton Foundation also has filed comments on the issue, and provides background information and updates on developments involving universal service on its website (www.benton.org/Policy/Uniserv).

"This is an historic opportunity for libraries and other eligible institutions to participate in ensuring that all Americans have access to electronic information at their libraries and schools," says Carol Henderson, executive director of the American Library Association's Washington DC office. On its website (www.ala.org), the ALA and other educational organizations are urging the Federal Communications Commission to approve a special discounted equity rate for libraries and schools for all telecommunica-

tions services available commercially. The savings to such institutions could total in the millions of dollars.

A federal-state joint board presented its recommendations concerning universal service—including discounts for schools and libraries—to the Commission in November 1996. The FCC is considering their recommendations and will issue regulations by May 1997.

Libraries also have a great deal at stake in the Communications Decency Act (CDA), which makes it illegal to "knowingly" send "indecent" material to minors or place "patently offensive" material on the Internet in areas that are accessible to minors. The law doesn't apply to entities that merely provide access to the Internet, so many libraries won't face liability. The CDA does apply to libraries providing content over electronic services, however, such as public bulletin board systems, World Wide Websites, chat rooms, gopher sites, and others.

On February 26, 1996, the ALA filed suit as the lead plaintiff in a coalition of corporate and public interest groups challenging the Act. The coalition is made up of organizations covering a broad range of telecommunications interests that "represent the media as it will look in the twenty-first century," according to Jerry Berman of the Center for Democracy and Technology (CDT), a member of the coalition. Judith Krug, director of ALA's Office for Intellectual Freedom, said "ALA is not a newcomer to this arena," and offered parallels between online and print information provisions.

Among the plaintiffs who joined ALA, CDT, America Online, and Families Against Internet Censorship in the suit were the American Booksellers Association, Apple Computer, Inc., the Association of American Publishers, CompuServe, HotWired Ventures, Microsoft, the Newspaper Association of America, Prodigy, the Society of Professional Journalists, and Wired Ventures (www.ala.org/).

On June 12, 1996, a panel of three federal judges in Philadelphia granted a preliminary injunction against the Communications Decency Act. In a unanimous decision, the judges ruled that the CDA would violate the Constitution's guarantee of free speech. On July 1 the U.S. Justice Department filed an appeal of the Philadelphia Federal Court ruling with the U.S. Supreme Court (www.cdt.org/ciec/index.html). The Supreme Court has decided that they will hear oral arguments on the CDA case on March 19, 1997.

two

Profiles in connectivity:
Libraries offering public access to new technologies

2

BEST COPY AVAILABLE

Profiles in connectivity: Libraries offering public access to new technologies

Following are eight profiles that demonstrate the potential of the public library to provide innovative, locally-centered technology programs. Rather than concentrate on technical details, these profiles focus on communities and real people. Based largely on interviews with librarians, community organizers, and library users, the profiles offer a unique insight into the value of public access to technology.

While it is impossible to reflect the entire breadth and scope of programs in place throughout the country, this group is representative of the many ways libraries have approached the challenge of providing electronic access to information. The libraries range geographically and include examples from every region of the country. They include state library systems as well as city systems and even individual libraries. Some of the libraries serve large, urban populations while others are in rural areas. The diversity reveals the public library's tremendous potential as an institution to meet the information needs of the twenty-first century.

InFoPeople

A Library Services and Construction Act-supported initiative administered by the California State Library

In March 1994 only one community in California offered free public access to the Internet. Twelve months later, with the help of the California State Library's InFoPeople (Internet for People) project, individuals in over 180 communities across the state could access the global network of information simply by stepping into their neighborhood public library.

The project involves a diverse group of libraries, including the Alpine County Library in rural Markleeville and the inner-city Watts Branch of the Los Angeles Public Library System. InFoPeople has taken a unique approach. Unlike other statewide programs, which focus on wide area networks to link libraries together and then to the Internet, InFoPeople opted instead to provide the resources for individual libraries to establish their own independent Internet connections.

The program has had tremendous success in linking communities together around the library. Schools, political associations, senior citizens groups, and other organizations have all been involved in putting the new resource to use in creative and practical ways which are detailed below. Rural communities geographically isolated from the rest of the state have taken advantage of this library-based resource to obtain state and government information. And people without access to the Internet at home or work have been able to discover and explore it without paying the usual costs associated with connectivity.

The InFoPeople grant

The InFoPeople project started within the California State Library as a way to provide Internet access to the public using the Partnerships for Change program as a model. This program, already in place in several locations across the state, facilitated collaborative projects between libraries and other groups in the community. According to Carol Gilbert, network specialist with the California State Library, the responsive relationship libraries had with their communities made them ideal access points for the Internet. Furthermore, with each library working with a member or group from the community to design the program and train users, the type of Internet services provided could be more easily tailored toward the needs of that community.

The program got off the ground in 1994 when the California State Library released the guidelines for grant applications. From nearly 200 proposals, 182 awards were given to a wide array of libraries from Del Norte County in the northwest to El Centro in the southeast. Under the agreement the participants were shipped a computer, modem, and a printer; provided with 100 hours of free access to the Internet; and given basic training on Internet navigation.

The hardware

Each site received a 486sx computer with a minimum 120 MB hard drive, two floppy drives, and a 14-inch color monitor. Each computer was equipped with a minimum 9600 baud modem, a security tie-down system, a surge protector, and an ink jet printer. Software preloaded included MS DOS and ProComm Plus. Finally, each computer came with a one-year on-site warranty.

In return the participants were required to make a few commitments. They had to contribute by sending a staff member to each training session, conduct at least one transfer-training session for other staff, and assign librarians to experiment with the Internet for at least one hour a week. In addition, participants had to choose a community partner. The partner and the library were to work as a team in identifying the

needs of the community and designing the best training model to ensure that the people who needed the service the most had access. By the end of the first year, participants had to install workstations in a public space and maintain the service for at least five years.

Serving isolated communities

Markleeville, home to the Alpine County Library, is located along the Nevada border, south of Tahoe and far from the large urban centers on the coast. According to assistant librarian Mary Wood, InFoPeople has provided an invaluable connection between Alpine County and the rest of California. "Many people use the terminals to see what's going on in the state," she explains.

Independence, a town of 600 residents, faces similar problems. The closest city to Independence is Bishop, 60 miles to the north. Glenna Stansifer, the county library director, points out that their Internet connection has allowed the library to offer new services for the community and explains that it "is a good tool to get in touch with people, not just computer hardware talking to computer hardware, but real people-to-people contact."

In Del Norte County, another rural area on the other side of the state near the Oregon border, Cris McCollum, library director, explains that "people have moved to this community for its quality of life; however, educational and enrichment resources are very limited here." The InFoPeople project has expanded the library's ability to provide these resources to the public.

Unlike these rural examples, the Mark Twain Public Library is located in the urban Long Beach area. But the community it serves is in many ways isolated from the rest of the city. The InFoPeople project at Mark Twain is primarily geared toward low-income junior high school kids who do not have the resources to visit the central library or larger branch libraries in other parts of the city. The Internet gives them access to an enormous amount of resources far beyond what their branch is financially capable of providing. According to Mark Parker, library systems manager, "Libraries may be unique in that they can provide a full spectrum of information regardless of format or content. In this respect, the Internet is an important tool of the trade."

Often in rural or isolated communities the library is the only commercial-free link to the rest of the world. InFoPeople, recognizing the importance of maintaining this link, provides the resources for libraries to continue this service.

The Internet: A natural extension of the public library

By accessing the Internet in the context of the library, people more easily grasp the potential of the Internet as a research and information tool. Many InFoPeople libraries report Internet training sessions are booked full with little or no publicity. According to Scott Bauer, automation librarian at the Contra Costa County Library, many people have read or heard about the Internet and simply want to see what it is all about. In return, Bauer says, "providing Internet access increases community awareness for the other services offered by the library."

InFoPeople mandates that each library choose a community partner to help develop the system, because it recognizes that libraries must provide not only vast amounts of information from around the world, but also relevant and customized information for the communities they serve. In practice this portion of the program proved more difficult than it appeared on paper. As the community partners serve on a volunteer basis, many libraries reported sketchy partnerships with few tangible benefits. Other partners had little or no technical expertise and therefore did not feel competent in contributing to the project. Nonetheless, many sites reported successful partnerships. The Del Norte County Library chose the local Small Business Association (SBA) to be their

partner. With more computer terminals available than the library, the SBA agreed to hold the training sessions at their location. The Central Branch of the Long Beach Public Library also chose a business-related partner, but their focus was on international business, as Long Beach is a port city. Other libraries worked with associations like the Public Corporation for the Arts, political organizations such as the League of Women Voters, and health-related agencies like the local Mental Health Association. Still other libraries picked individuals to serve as community liaisons. One library chose a coordinator for homeless programs; another chose a member of a senior center computer club. Representatives from the local government were also popular choices.

One of the more successful community partnerships was initiated by the Mark Twain Branch of the Long Beach Public Library, located in a low-income, primarily Cambodian neighborhood with a large percentage of children. The branch already had a partnership with the local junior high school, under which volunteers help students with homework after school. The InFoPeople project continued this relationship, providing the Internet as an additional research and homework tool. According to Mary Hopman, general librarian at the branch, "We're reaching and convincing kids that education is fun and interesting. Without an educational background, children in this neighborhood won't have a good life. Having a positive impression of education is very important."

Connection details

Each library is provided 100 free access hours through CERFnet, a service provider chosen through a competitive bidding process. Two accounts are available, one for staff and one for the public, accessible via a local or toll-free dial-up number. Libraries can access the Internet through either a shell account or a Serial Line Internet Protocol (SLIP) account. A library-oriented gopher server maintained by InFoPeople provides access to the Library of Congress' LC Marvel gopher, other libraries' gophers, and California Legislative Information. When the free hours expire, each library must find its own service provider.

Programs like this reveal the complexity in providing "universal" access to information. As each local area is different and has unique needs, no single plan for providing this access will work in all places. But the InFoPeople project, by taking advantage of relationships between local libraries and their experience in providing services to their communities, has made a significant first step toward universal access.

Future plans

Although the original funding came from a one-year Library Services and Construction Act (LSCA) grant, the California State Library has received additional LSCA funds to continue supporting the participating InFoPeople libraries until each library is able to fund its programs independently. Using this money, the California State Library offers advanced training workshops; planning sessions to help libraries work with community partners; refresher training courses; and support in locating Internet service providers once their 100 free hours are used. In addition, the California State Library is offering funds for libraries to apply for more grants. Many libraries have taken advantage of this additional money to upgrade their once speedy 9600 baud modem to a more current 14.4 or 28.8 modem. Other libraries are applying for grants to expand the program to branch libraries or to get more workstations. Many rural libraries with expensive phone bills are opting to apply for additional telecommunications support.

One new condition placed on these additional grants, however, is that each library must develop its own World Wide Website. This condition stems from the California State Library's goal of a networked state in which all libraries are linked to each other and other state resources through the web. InFoPeople's web page contains links to all

participating libraries with home pages as well as to the state library's home page, and to other government-related pages (www.lib.berkeley.edu:8000).

While still in the development stages, the value of this interconnection is already reaching people in California. As one library user put it, in a message of thanks to Carole Leita of the Berkeley Public Library, "I find the library's home page to be very useful. Maintaining the links between the various threads in cyberspace could become the main job of the librarian. Keep up the good work."

Vermont Automated Libraries System

Vermont Department of Libraries

Fifty thousand Vermonters have no public library service. More than 90 percent of the 210 public libraries are in towns with populations of less than 1,500 and are staffed by volunteers or part-time personnel having no formal library training. Nearly 50 of the public libraries do not even have a telephone line. Furthermore, during the early 1990s, Vermont's Department of Libraries (DOL) lost 22 percent of its staff positions and more than 18 percent of its operating budget due to reductions, absorbed costs, personal services increases, and inflation.

Against these odds, the DOL has connected the widely distributed and mostly rural Vermont library system into an impressive electronic network. The Vermont Automated Library System (VALS), demonstrating the role of the library in providing electronic access, is based on the same premise guiding most public libraries in providing nonautomated services: "Access should be made available through the local library to the individual quickly, at no cost or low cost, and with no pre-judgments or limitations" (Patricia E. Klinck and Sybil McShane, "The Vermont Automated Libraries System," p. 1).

Philosophy of VALS

According to state librarian Patricia E. Klinck, "Growing demand for electronic information services came from even the most rural and remote areas of the state and presents a challenge not only to the state, but to all Vermont libraries to find ways to ensure that all Vermonters have the same access to books, information, and worldwide resources as their urban and suburban counterparts" (Vermont Department of Libraries, Biennial Report, 1995, p. 8). Albert Joy, of the Vermont Library Association and librarian at the Bailey Howe Library of the University of Vermont, points out: "The Internet as a tool is especially benefiting to rural areas because of the distance involved in between places. . . . Sharing information—while valued—just doesn't work the same way here as it does in the cities. If I were in New York or Boston, I could just jump on the train and be at another library. Here, it's an hour-and-a-half drive."

A key element of the program is centralized funding combined with decentralized control, because most of the libraries lack the tax base to develop their own technology programs. In order to keep telecommunications costs down and to allow easy access to local information, the DOL established VALS as a distributed network, which means that rather than placing all the information on one central computer, VALS is composed of several computers spread out all over the state—each holding local information, yet capable of accessing the other computers if necessary.

VALS is unique because it involves all types of libraries. Coordinated by the state's department of libraries, it comprises a partnership of public, state, and academic libraries, all sharing resources over the network.

Project history

The program began in 1984, when the Department of Libraries, University of Vermont, Middlebury College, and later the Vermont State Colleges met to draft a plan for addressing the changing nature of information distribution. After two years of negotiation, they signed a contract with ATLAS software to build and support a statewide computer network. In 1984 Middlebury College and the DOL put their catalog systems online, and then Vermont State Colleges joined them online. Finally, in 1988, these systems linked to create the Vermont Automated Libraries System.

Once VALS was running, the DOL created a toll-free dial-up access network to help individual public libraries connect. This access was combined with a state-funded program for matching microcomputer grants to public libraries in areas of low population. In addition, Ford Foundation-Harvard Kennedy School Grants for Innovations in State and Local Government helped upgrade VALS and provide additional microcomputer grants. In 1989 55 public libraries were online; by 1995 the number had grown to 118 (in addition to the 20 special and academic libraries and 158 school libraries). Dial-up access became available to the general public in 1990. That same year automated services for people with disabilities were brought online and full text databases of Vermont Supreme Court opinions were added. The early 1990s witnessed the addition of many more items, including newspaper indexes, state human services databases, and Internet access (lynx, gopher, and hytelnet). By 1994 and 1995 full text of Vermont state and U.S. government documents became available, as well as other features including Environmental Law Division decisions and selected full text general magazine articles.

Nuts and bolts

The ATLAS software developed by Data Research Associates is an integrated library system operating primarily on Digital Equipment Corp. (DEC) hardware and software developed by Data Research Associates of St. Louis. Local bibliographic databases (six online library catalogs), linked directly through DECNET with dedicated telephone lines and dial access lines, allow remote users to query all the online catalogs to determine location and status of material with a single local telephone call. This linked partnership approach was chosen over the centralized approach in anticipation of rising telecommunications costs and the realization that the predominant use of each collection would be local. Any standard microcomputer with telecommunications software emulating a vt100 computer terminal will work.

"The first issue is access, access, access, and then the second is training, training, training," says Albert Joy. One without the other is useless. "It's so important to train the librarians to use the Internet so that they can turn around and train the general public. . . . The problem, though, is that the towns can't afford to pay the librarians for the time away from their jobs to get the necessary training—not to mention any class fees." As a result, VALS has implemented training programs, conducted on-site by the vendor or in-house by higher-level staff. Professional staff receive advanced training at the vendor's location. Other users have been kept up-to-date with multi-day training sessions provided by department staff, and extensive documentation.

How is VALS used?

According to Patricia Klinck, VALS is used in a variety of ways. "One man said that he got through college on VALS. He used to have to drive to libraries in order to do his research. With VALS he did all his research online. . . . Government information is another widely used resource. All Supreme Court decisions are put up minutes after they are issued. VALS has also opened up the state bidding system. The old boys' network no longer has

control over it. All state contracts go up Thursday afternoon. One man said "I would never bid on highway contracts because my operation is not big enough, but now I can see who gets them and I can subcontract with them."

Jeanne Walsh, director of the Dover Free Library, is planning on installing a second computer and phone line to accommodate the public use of the system. "It has been valuable," Walsh says, "for students and people doing research through state colleges."

Funding

The Department of Libraries now devotes only 6.5 percent of its overall budget to the operation of VALS. Funding for system operations has come exclusively from state funds. The automation program is a priority of the department, second only to Reference and Law Information Services. Ford Foundation Innovations Grants provided matching funds for computer equipment.

Because of VALS, the Dover Library, serving a population of approximately 1,000, offers an indispensable link between library users and academic research institutions that would take hours to reach by car. "I can't imagine doing business without it. It has completely changed our image in the town."

In Lyndonville, with a slightly larger population (5,371), VALS and other technology programs help library users develop new job skills. Originally based on agriculture, light manufacturing, and the railroad, Lydonville's economy has suffered as these industries have faded. "People are looking for new jobs and new opportunities," says Pat Hazlehurst of the Cobleigh Public Library (CPL).

The CPL has responded by offering a series of literacy, continuing education, and, of course, computer training classes. The computer classes, Hazlehurst explains, "are not like courses in college. They are for people with a fear of computers. They are designed to help people begin to get comfortable with technology. Since we began, we've been absolutely snowed with people calling. . . . We have found people looking for new jobs facing applications that ask 'Do you have computer skills?' Now they can say 'yes.'"

In addition, Hazlehurst has found that many parents are at a lower computer literacy level than their children. As a result the CPL started a family computing program in which kids tutor their parents. "The generation gap has always been there. This program tries to help. And besides, kids love to show their parents what they know that their parents don't."

The CPL also offers a resume program, four computers for word processing, and two state-of-the-art computers for advanced design and publishing. According to Hazlehurst, one man came in without any computer experience and now he is using imaging and page layout software to design his own newsletter. "Other people come into the library to use computers and they see books, too. They are drawn in by one aspect of our services and exposed to another."

By serving as a computer training center, the CPL is providing the skills people need to access VALS, a program that has offered tremendous benefits to Lyndonville. "We're in poor area, we can't have everything everybody needs and wants. With VALS we can share with rest of state, the University of Vermont, Dartmouth, and even out of state resources. . . . In a rural, isolated environment this is an important connection."

Information to rural areas

Wiring an urban public library located in a calling region with competing Internet service providers is certainly a difficult task. Making those same electronic options available in a rural setting poses additional problems, however. At the same time, it is often more crucial for individuals in these isolated areas to have easy access to electronic information. According to Albert Joy, "The electronic stuff is crucial here—many of these libraries are

one-room libraries without a lot of funding, and things like community service bulletin boards or access to FirstSearch databases can be very empowering." Through the public library, VALS is making this "stuff" available and accessible to everyone.

Nebrask@ Online

A statewide computer network developed by the Nebraska Library Commission

Nebraska is no stranger to the challenge of providing services to rural America. With nearly one-fifth of its population spread out over the entire central and panhandle regions, Nebraska faces difficulties common to midwestern states in providing resources to remote areas. Nebraska's answer has been unique: a comprehensive communications and information infrastructure built in concert with public and private institutions.

The effect of these programs has been significant. Of the 83 counties losing population during the agricultural collapse of the 1980s, all but 20 are now either growing or have stabilized. John Allen, a rural sociologist at the University of Nebraska, says that it is no coincidence that the state's population turnaround mirrors the growth of the ambitious telecommunications program. "After the 1980s," he says, "we looked around and said we have a decision to make: We can do nothing and just watch our population drain away, or we can try some creative things to hold onto our people" (*Wall Street Journal*, November 21, 1994).

Role of the library

The secret to success has been partnerships among organizations—such as universities, local freenets, state agencies, and libraries. Each organization brings its own expertise and experience to the network. While libraries may lack the funding resources of universities, the technical expertise of freenets, and the political connections of state agencies, they offer the indispensable ingredient of local public access. As Cindi Hickey, the technology librarian for the Nebraska Library Commission, points out, "Libraries are our local nodes for information. Since they are already tied into the community, local libraries are uniquely positioned to adapt information to the particular needs of their community."

The beginnings of Nebraska Online

The seeds for Nebraska Online were planted as far back as 1972, when the state legislature—recognizing the need to disseminate government information to the public—passed a bill that created the Nebraska Publications Clearinghouse (LB 1284). The state chose the Nebraska Library Commission (NLC) as the body responsible for administering the program. Originally intending print dissemination, the NLC discovered that a significant amount of the information could be accessed electronically. As a result they began to develop a telecommunications system for libraries to use to tap into the state computer databases. Eventually the NLC expanded their system so that state employees could also tap into the system. Soon, different groups and state agencies began to see it as an economic development tool.

By the time of Nebraska's pre-White House Conference on Library and Information Services in 1991, the NLC had completed several information technology projects in conjunction with other agencies. According to Mary Jo Ryan, the Nebraska Library Commission's public information officer, this experience led to the important decision of choosing "Nebraska Information Partnerships" as the conference's theme.

Political allies

Nebraska Online reveals the importance of political backing. U.S. Sen. Bob Kerry, former governor of Nebraska, used local and national influence to support this and other Nebraska information technology efforts. In addition, Governor Ben Nelson secured the cooperation of state agencies and gave the project a high profile in the state's agenda. Perhaps most significant, however, has been Maxine Moul. As Lt. Governor, Moul took on rural development as her highest level of interest. Later, as the Director of Economic Development, she supported the NLC in its cooperation with state agencies in applying for joint grants, sharing resources, and developing Nebraska Online as a multifaceted telecommunications program.

The conference spawned many initiatives, including the Nebraska Development Network (NDN), a coalition of organizations working together to create and support community-based economic development. In need of a means for distributing information, the NDN and the NLC decided that the Nebraska Library Commission would administer a telecommunications network to link Nebraska from end to end, providing easy access to information that the Nebraska Development Network, the Library Commission, and other organizations produced. This telecommunications network became Nebraska Online.

The service went public in October 1992, providing access to the NLC's information and communications system through toll-free numbers and public access terminals located in more than 35 libraries across the state. Through Nebraska Online, users could access information about several thousand organizations and programs offering human, community, and economic development services. They could look up the full texts of Nebraska's state legislation; check out the state job listings; browse through a variety of newsletters, news releases, bulletins, and other publications written by local organizations and local government; and much more.

Community impact

"I think it is one of the most exciting things to happen to the library system in Nebraska, perhaps in its history," said Brenda Carroll, library director at Holdrege, when Nebraska Online debuted. One of her first tasks in providing the system to the public was to assist two women in starting their own herb vinegar producing business. On the town library's computer, Margo Carlson and Lynn Embury searched for the names of Nebraska companies manufacturing bottles and white wine vinegar (*Omaha World-Herald*, "Development Efforts To Get Electronic Gift," Bill Hard).

Nebraska Online's greatest successes occurred as a result of partnerships. The Kearney Public Library and Information Center, for example, collaborated with Nebraska Online, the Kearney Freenet, and the University of Kearney to create a public Learning Technology Center. This cooperation enhances all the programs involved. For example, the center's resume-writing workshops include a search of Nebraska Online's job listings. At the Kearney Library, schools have benefited from the training resources, local businesses have conducted computer-based research, church groups have had an opportunity to post bulletins, and writing groups have been able to organize workshops. According to Jeanne Saathoff, the library director, "Nebraska Online has become integral to the library. It has had a real positive impact in our library and it will be even more important in the future."

Nebrask@ Online

After nearly three years in operation, Nebraska Online faced an important decision. The growth in new users was straining the infrastructure, while at the same time expectations

for the system were growing, especially as graphical interfaces were replacing text-based interfaces. In addition, complaints were being lodged concerning the difficulty in getting around Nebraska Online's menu.

In response, the NLC chose a controversial plan—to reconstitute Nebraska Online as a fee-based system. As part of the process, they contracted the management of the network to a private corporation, which, after slightly altering the name, established Nebrask@ Online. The new service offered a graphical (web-based) interface in addition to several new features including access to driver's license records and Secretary of State records, data from the Nebraska court system, and Internet access. While solving many of the problems with Nebraska Online, the system has received criticism for its fees. As one librarian put it, as she tried to resolve a method of payment for her branch, "libraries seem to have taken a back seat to profits."

Other librarians, however, welcome the change, which they see as necessary to make Nebrask@ Online self-sufficient. And the new graphical-based interface will make navigating the system more intuitive, requiring fewer staff and less public training.

Nebrask@ Online costs

The new costs are: $50 annual subscription fee (which includes a service manual, Netscape web-browsing software, and access to training and a 24-hour technical support line via a toll-free number). When using the toll-free modem access, a uniform connect-time fee of 12 cents a minute applies. In addition, access to certain state records requires a transaction or record search fee, ranging from 25 cents to $3.50.

Internet access, at the special library rate of 10 cents a minute, is still a bargain to libraries that would otherwise pay a long-distance toll to access the global network, owing to the lack of commercial providers in rural areas.

In any event, Nebrask@ Online has had a significant effect. As Cindi Hickey points out, telecommunications access in public libraries will "shift perceptions about the library from its being seen as a reading room or book collection, to its new importance as an information utility."

The Flint Community Networking Initiative

Based at the Flint Public Library
The City of Flint

Flint, Michigan, is the birthplace of General Motors and has long ridden the fortunes of the automobile industry. With a population of 140,761, composed almost equally of whites and African Americans—with smaller percentages of Native Americans, Asians, and Latinos—the city has the tenth highest average wage of any U.S. metropolitan area. At the same time, 45 percent of the children in Flint live below poverty level—and the city faces the difficult problems of suburban sprawl, declining school enrollment, and a diminishing tax base.

Flint also has many assets: several institutions of higher education; popular annual art and jazz festivals; and a nationally acclaimed cultural center that includes a planetarium, an art institute, a museum, an institute of music, a radio station, and a community meeting hall. Along with these the city boasts another acclaimed cultural institution—the Flint Public Library.

The Flint Public Library

The Flint Public Library (FPL), according to director Gloria Coles, "continues to uphold, as it has for the last 144 years, the fundamental principles that make public libraries public libraries. It is open and nonjudgmental to those who enter its doors. It provides a full spectrum of recorded knowledge and opinions. It is free."

In keeping with these principles, the FPL has a strong legacy of collaboration with community groups. At a time when GM was laying off thousands of workers, the library offered specialized services to those who needed information on changing careers and obtaining further education. Working with Region 1-C of the United Automobile Workers of America, the FPL initiated a live reading series that highlighted minority writers of prose and poetry. A project with the Genesee Valley Area Agency on Aging provided computer training for senior citizens who needed these skills for employment. And the FPL has worked with schools and social service agencies to bring young people the fulfillment and pleasure of reading. Each year a cadre of storytellers representing the FPL reaches out to thousands of children.

This history of collaboration with the community led naturally to the FPL's central role in the Flint Community Networking Initiative.

Flint Community Networking Initiative

The Flint Community Networking Initiative (FCNI) evolved from a single Internet training project for 30 librarians into a large, collaborative project with a fully equipped computer and Internet training facility. The FPL and the Mideastern Michigan Library Cooperative obtained an initial grant in 1994 from the University of Michigan Community Stabilization and Revitalization (CSR) Project, a federal Department of

What does a public library focus bring to the Flint Community Networking Initiative?

Emphasis on training

Librarians are professionals trained to identify, organize, and provide access to information, which makes them perfect "navigators" for communities trying to make sense and use of a global network of information. "The premise of the planners of the Community Networking Initiative," says one report, "is that training librarians to become both skilled cyberspace navigators and digital resource publishers is a prerequisite for the development of a successful web-based community network."

Emphasis on community skill-building

A major goal of the initiative is to equip community leaders with the skills to "employ the strategies of virtual community to build and sustain our real community." To this end, Flint librarians work with other information providers to build their understanding of civic networking and the World Wide Web and to help them create home pages and publish information on the web.

Integration of digital with other kinds of resources

When future patrons come to the Flint Public Library to log onto the web, they will be able to access print, video, audio, and face-to-face communications that complement what they find online. For example, a patron might read a book or magazine article about Native American crafts and then consult the home page of the Greater Flint Arts Council to find out about Native American cultural events throughout Michigan. A notice about a breast cancer screening posted by the Health Department could be augmented by general information on breast cancer from the library's health collection.

Housing and Urban Development (HUD) grantee. Through a contract with the University of Michigan School of Information and Library Studies (SILS), 30 Flint-Genesee-area librarians received general Internet training. Twenty of these continued training in the spring to become expert navigators and publishers on the World Wide Web. The report on the CSR Internet Training Initiative is available for those planning similar efforts (www.sils.umich.edu/FlintCSR/report/report.html).

Faculty at SILS, whose project to reinvent library education is supported by a substantial grant from the W. K. Kellogg Foundation, were impressed with the Flint Library's commitment to public access to technology and its history of community involvement.

Nuts and bolts

The Flint Public Library's Internet Training and Community Networking Center provides World Wide Web access through a joint Merit/Ameritech dedicated ISDN line. The center consists of 18 Power Macs on Ethernet, nine with Windows compatibility, and a workgroup server running the Apple Internet Server Solution. The center has multimedia creation tools and an extensive documentation library. The center's equipment and connectivity enable Flint librarians to add value to the World Wide Web.

As a result, Professor Joan C. Durrance, in conjunction with Flint Public Library Director Gloria Coles and Mideastern Michigan Library Cooperative Director Sara Behrman, developed the Flint Public Library as the first living laboratory for CRISTAL-ED (Coalition on Reinventing Information Science, Technology, and Library Education). This provided the Flint Community Networking Initiative with additional grant money and in-kind support.

With these two sources firmly in place, others were quick to follow. Apple Computer gave a prestigious Apple Library of Tomorrow equipment donation, and the Mideastern Michigan Library Cooperative obtained a Library Services and Construction Act (LSCA) grant for an Internet training center. Parallel to the development of FCNI, the FPL also received funding from the Library of Michigan's LSCA Technology Grant Program to upgrade internal networks and establish a wide area network linking all computer and CD-ROM stations in the Flint system. This takes Internet access beyond the training lab and integrates it into everyday use by staff and the public.

In February 1995 the Flint Public Library hired Sheryl Cormicle Knox as project director and lead trainer, just weeks before the library's Community Networking and Internet Training Center officially opened. Several rounds of training for librarians have been offered, as well as curricula aimed at the staff of community agencies and the general public. In addition, FPL's WebStation is a growing resource built by the librarians themselves.

Community benefits

In its tradition of involvement, the Flint Public Library will cooperate with diverse community groups and agencies in the Flint-Genesee area to introduce leaders to civic networking, develop an understanding of the World Wide Web, and establish a initial presence on the web. The partners in the initiative are also working with the Greater Flint Education Consortium and the Genesee Freenet. By mid-1996 staff and volunteers at the library were imparting Internet and web skills to the public.

By providing access to networked information in the library, the project brings together the wealth of local information physically stored in print form with the relevant retrieval tools found on the network. The community focus will include recycling information, government information, sources of funding for small businesses, college scholarships, health information, and much more. The FCNI's web page currently points to the web pages of the Genesee County Health Department, the Community Capital

What made it happen

The Flint Public Library's history of connectedness to its community and prior collaboration with schools, organizations, and agencies meant it was already a central institution in the town and a logical hub for a community information network.

The library's partnership with the University of Michigan School of Information and Library Studies is a model collaboration between an academic institution and a public library. SILS faculty and staff had the vision and expertise to serve as advisors to the project, to plan and conduct the Internet training, and to help with technical matters like connecting the ISDN line. Students in a community information class at SILS designed the network's first graphics and home pages. The university, by way of its grant from the Kellogg Foundation, was also a funding source. The library, in turn, has become a valuable laboratory for SILS research on librarianship and community information.

Federal seed funding from the Department of Housing and Urban Development, by way of the CSR Project, was a critical "jump-start" that leveraged private money. Now that the project is running, the partners have committed themselves to sustaining the initiative on their own and plan to pay a greater portion of the operating costs each year.

Private funding also helped fuel the project—both the Kellogg Foundation's grant to SILS for the creation of new library science curricula and Apple's in-kind donation of equipment.

Development Corporation, the Greater Flint Arts Council, the Salem Housing Task Force Corporation, the Community Foundation of Greater Flint, and the Flint Neighborhood Coalition, with more pages to come.

Future

The Library of Michigan has funded six other Internet Training Centers throughout the region, and all regularly share materials, resources, and experience. In addition, because of extra dollars attracted to the project through collaboration, the Mideastern Michigan Library Cooperative has established two more Internet training "mini-hubs" in its three-county service area. All sites are now being used to train a core of librarians. Soon they will be used by librarians and local leaders to create community-specific information resources.

Charlotte's Web and PLCMC

Based at the Public Library of Charlotte and Mecklenburg County

It is no surprise to Pat Ryckman, new technologies manager at the Public Library of Charlotte and Mecklenburg County (PLCMC), that residents from all over come to the library for the latest in computer technology and telecommunications. "People can't just automatically make full use of [the Internet], they need guides, and librarians are perfectly trained to help them. . . . Libraries have been in business for 100 years providing information and the staff to support it—accessing the Internet is part of the project."

The PLCMC, however, goes far beyond providing a handful of public Internet access terminals. In partnership with the community and through the work of Charlotte's Web, the PLCMC is integrating computer technology and telecommunications into the social, economic, and political fabric of Charlotte and Mecklenburg County as well as providing a working example of the public library's potential as a full-fledged community information center. The library provides the office space and—through its branch

libraries—22 of the more than 45 public access sites in the region. In addition, library patrons are equipped not only to browse the Internet through a direct connection, but also to work with scanners, printers, CD-ROM titles, and a software collection that would earn the envy of a multimedia professional.

> "[Our partnership with the PLCMC] redefined my idea of a library as a convener of the community rather than just a depository of information."
> —*Steve Snow, project director, Charlotte's Web*

Charlotte's Web

Charlotte's Web (www.charweb.org) began in spring 1993 as an idea in the mind of the arts editor for the *Charlotte Observer*, Steve Snow. Interested in finding a partner to begin a community-based computer network, he visited several institutions in the Charlotte area, including the university, the community college, and, of course, the public library. The PLCMC, recognizing the potential of such a network and offering the best resources, agreed to become the main partner. According to Snow, the partnership with the library offered both tangible benefits (space and a 486 computer) as well as intangible benefits: "The library partnership offered a metaphor that people could understand. We had a terrible time explaining what we were trying to do." Having a computer in the library, Snow explains, suggested an "electronic library" as a metaphor for what a community computer network really is. The partnership "redefined my idea of a library as a convener of the community rather than just a depository of information."

Several months after meeting with the library director, a town meeting was organized to determine local interest in a community network. Riding on the enthusiasm of the 80 volunteers who turned up and expressed approval for the plan, grant writing began in earnest and lasted through winter 1993–94. Finally, on June 17, 1994, Charlotte's Web went online as a text-only, dial-up bulletin board service. The response from the community was overwhelming. By January 1995 "Fern," the 486 development machine originally running the web, was joined by "Wilbur" and "Avery," two new Sun Sparc 20s. And Steve Snow, David Ramsey, and Carolyn Felton formed the full-time staff as, respectively, project director, systems administrator, and volunteer coordinator. Several months later, Charlotte's Web made the transition from a gopher-based text-only bulletin board to a World Wide Web-based system.

Meanwhile, use has skyrocketed (during early 1995, nearly 100 percent per month). Charlotte's Web has expanded from the four phone lines installed when the system went online to 40 lines currently hooked up. September 1995 saw 9,300 dial-ins, and the average time online rose from 15 minutes to 40 minutes. This rapid increase should come as no surprise considering that over the first six months of 1995, the amount of information available on Charlotte's Web grew by more than 300 percent.

Reaching the community

The mission statement of Charlotte's Web promises to enhance the community socially, culturally, and economically. Toward this goal, the network has forged numerous partnerships with local organizations that extend ownership of the program to as many people as possible. In addition to the library, Charlotte's Web has enlisted the partnership of Smith University, an historically black university, Central Piedmont Community College, and WTVI, Channel 42, the only community-owned public television station in North Carolina.

Furthermore, Charlotte's Web is connecting numerous other organizations through remote access sites. As of August 1996 Charlotte's Web had free public access terminals going into all of the public library branches and 12 park and recreation sites. In addition, mini-hub networks (see sidebar) were set up in Dillehay Courts, three

Salvation Army boys and girls clubs, the men's homeless shelter, the women's and children's shelter, Charlotte Emergency Housing, and the Johnston YMCA. For each site, training and ongoing support is provided.

In another type of partnership, Charlotte's Web has trained several organizations to publish their own information over the network. With the help of a grant from the National Library of Medicine, for example, health care professionals have designed and created their own World Wide Web pages for AIDS/HIV information. Thanks to the training from Charlotte's Web, they will continue to maintain and update these pages.

Mini-hubs

Software found on the Internet and configured by David Ramsey, the system administrator, enables Charlotte's Web to configure a 286 computer with nothing more than a floppy disk, a modem, and an Ethernet card to act as a TCP/IP router. This computer can then connect many workstations simultaneously and directly to Charlotte's Web, a technique that allows up to four computers to access the web at the same time using only one phone line. Since the software is free (from the Internet) and 286s are often donated, this solution provides an extremely inexpensive and relatively hassle-free method for providing access stations. Documentation on Charlotte's Web provides instructions on how other networks can set up similar arrangements.

As Steve Snow remarked, "to me what's important, aside from providing the information to the community and the rest of the world, is that some people who didn't have prior knowledge about [telecommunications] learned how to do it and did it, and suddenly they are providers of information." Charlotte's Web has taken on the responsibility both of providing access to information and of ensuring an equal opportunity for people to contribute information, thus fostering a greater degree of ownership and involvement.

Like other public libraries and community networks, Charlotte's Web addresses civic issues. A collaboration with the Education Foundation launched a community-awareness campaign concerning the school board. With elections approaching, there was not a great deal of knowledge about school board members, their responsibilities, the campaign issues, and other basic information necessary for a legitimate election. Charlotte's Web agreed to place this material, as well as similar information from the League of Women Voters, on the web. Now the community will have access to this information simply by stepping into the library or another public access site and dialing into Charlotte's Web.

One of the most successful outreach efforts has been enlisting the help and expertise of the community in running the operation. Starting in January 1995, Carolyn Felton, the volunteer coordinator, took down a list of 71 names of potential helpers.

"We've always tried hard to reach out to the community. We have a long history of collaboration, so Charlotte's Web is a natural outgrowth of the library. Small organizations look to us for that kind of thing, they look at us as an incubator of new ideas."

—Pat Ryckman, new technologies manager, PLCMC

During the next six months, volunteers worked 4,250 hours, for a total labor donation equaling $88,000. A record 132 people were actively involved in July. Volunteers have contributed everything from clerical work to Unix systems programming. They have gathered and reviewed content, provided publicity through the Speakers Bureau, and trained users and new volunteers. Frada Mozenter and Mark Little, for example, collaborated to create Navigating Charlotte's Web, a training manual for information providers. Thomas Hendrickson and Russell Callaway, former IBM employees, have

been doing inventory and repair work on donated equipment. Recently, 50 volunteers agreed to work two to four hours per month as trainers in the library. According Carolyn Felton, "It is the active involvement of citizens from all over our area, contributing skills and information, that brings this project life!"

The Virtual Library

About the same time Charlotte's Web was getting started, a new space opened up at the PLCMC that provided an opportunity for a new library program—a "virtual library." Opened April 3, 1995 (and located next to the offices of Charlotte's Web), the eight Macintosh PowerPCs and 12 PCs provide access to full multimedia production tools, a direct connection to the Internet, a wide range of software applications, and both black-and-white and color laser printers.

Virtual Library resources

All workstations are equipped with 16 MB RAM or more and a double-speed CD-ROM. They are networked into the Virtual Library LAN, which connects to two file servers, 28 CD-ROM drives, three laser printers, and the library's T1 connection to the Internet (providing a direct connection to the Internet with full graphics, video, and audio support). The workstations are loaded with 70 software applications. In addition, three of the Macintosh workstations are connected to scanners (two black-and-white and one color).

The Virtual Library has entered Phase Two, which involves dividing the computers into groups of five "pods" devoted to specific functions. Pod one is committed to drawing and animation applications as well as virtual reality, 3D, and morphing. These computers will be loaded with software such as Corel Draw, Freehand, Morph, Animator Studio, and Vision 3D. A second pod is devoted to desktop publishing and OCR Scanning. Complete with QuarkXpress and Adobe PageMaker, these computers are also connected to two black-and-white scanners. Pod three is dedicated to imaging and multimedia. Patrons using computers in this pod can access the color scanner (and Adobe Photoshop) and also use the library's digital camera, enabling them to manipulate their work with software such as Adobe Premiere, and to output to videotape, CD-ROM, and even Syquest drives. The fourth pod is for exploring the library's 300+ CD-ROM titles. The fifth and final pod houses a variety of new technologies, including GIS (Geographic Information System), Borland dBASE, keyboards and software enabling patrons to digitize and compose music on the computer, and AutoCad programs. This area is also the place to explore new programs and hardware which are designed to assist computer users with vision and mobility impairments.

Technology that engages the community

Although the sophistication of the equipment might confuse even experienced computer and multimedia users, it hasn't stopped the librarians at the PLCMC from doing their job. According to Pat Ryckman, the librarians picked up the manuals, experimented on the computers, and asked questions until they became knowledgeable and experienced navigators. From there, they have launched an ambitious workshop schedule designed to impart their knowledge to the community. All of the workshops are free, last between one and three hours, and are taught by library staff (with help from Charlotte's Web volunteers). Titles include "Surf the Internet," "Introduction to Microsoft Word," "Government Documents on the Internet," "Introduction to AutoCAD LT," and "Before You Buy a Computer."

As with Charlotte's Web, community involvement has been extensive. Groups as diverse as the Charlotte Institute of Rehabilitation, International Black Writers, and Work

First (a works skills training program for unemployed women) have all been trained and use the Virtual Library.

Jane Grau, a freelance writer and English teacher, for example, organized a training session at the Virtual Library for Women in Communications (an organization of women involved in the information professions). She thinks of the Virtual Library as an inseparable component of the main library. "We use the library as a resource to get information and the computers and copiers and scanner help us process that information in myriad ways." Knowledge is power, Grau points out, and the Virtual Library "expands our capabilities so that our power is limited only by technical skills."

Another participating group, the Shepherd Center, supports programs of continuing education for older adults through volunteers. According to Nancy Hiley, the program director, "the public library has always been helpful in many ways—helping us put programs together for education series, participating in the downtown 'Explore Charlotte' tours, and many other projects." When she heard about the Virtual Library, she jumped at the opportunity to expand their education program to include computer and Internet navigation. The first two-hour workshop received such a positive response that a second workshop was scheduled to accommodate the overflow. Hiley remarks that the program has been "enormously exciting, it certainly has broadened our ability to reach older folks."

The future library

The success of Charlotte's Web and the Virtual Library is providing a powerful engine for their expansion. Charlotte's Web is setting up new remote access sites; training more volunteers and organizations; expanding content; and, most recently, looking for a sponsor for the "WebMobile," a traveling van equipped with laptop computers and cellular modems capable of reaching remote areas. The PLCMC is exporting the most successful applications of the Virtual Library to the branches.

The community-library partnership provides a remarkable antidote to the stereotype that computer technology will compartmentalize and fragment society. As the Public Library of Charlotte and Mecklenburg County demonstrates, technology and telecommunications, if developed by a community-based institution like the library, can bring people together.

The Center for Technology at the Seattle Public Library

Seattle, Washington

One week, high school students from West Seattle, Rainier, and Franklin, Washington, participate in a live computer videoconference; the next week, they observe an over-the-Internet cybercast of the Space Shuttle crew at work. All of them, as Seattle residents, are entitled to an email account and have access to hundreds of public computer terminals, which provide unlimited text-based access to the Internet. A smaller but growing number of computers, also open to the public, offer the latest in graphical and multimedia applications.

Is this an AT&T ad? Not exactly.

Rather than AT&T's ever-hopeful "You will" ad campaign, the Seattle Public Library's Center for Technology has already made these events happen. And these services are geared not toward corporate giants but, free of charge, toward every Seattle resident.

Building on a history of offering basic literacy classes, hosting cultural exhibits, providing homework assistance programs, and collaborating with community organizations,

the Seattle Public Library has one of the most technologically advanced public library telecommunications programs in the country. But Willem Scholten, former director of the library's Technology Center, is quick to acknowledge that these services would not have been possible without the tight collaboration of the other "pillars of information" in the Seattle community. The library is "just one of many parts that make up the community, which includes the school system, churches, community organizations—we have to solve [problems] as collaborative unit," Scholten says. Nevertheless, Scholten takes seriously the particular responsibility of the public library to provide public access to high technology. "Since the library is one of our main information outlets, it plays a big part in providing democratic access to this technology. Therefore, we must adapt to changing ways of disseminating information."

In addition to simply providing access, however, Scholten sees new roles the library can play in the community by incorporating the technology into its functions. "Libraries are not just warehouses of content for people to take from," Scholten insists, "but they can take in content as well and store it for the next three hours or 50 years."

"It is like the printing press, when stories were distributed on paper," he explains. "It is very well possible that the new form we are going to use to transport stories is by computer." In this scenario, "libraries have an incredibly important role to play. By tradition, libraries are the last safety net to ensure that everybody has access."

History: The importance of collaboration

The SPL began offering full public access to the Internet on July 6, 1993. Every branch in the city offered the service through their online catalog, making the Internet available in 23 locations, including two branches located in housing projects. According to Craig Buthod, deputy city librarian, the public's response was overwhelming. Within a few months the library was recording 60,000 user connections per month.

Undoubtedly, one of the greatest draws to the program was access to the Seattle Community Network (SCN). According to Bob Mascott, board member of the Seattle Community Network, the SCN began as a project of Computer Professionals for Social Responsibility. Although it originally came online in November 1992, the network did not have its official opening until summer 1993. Because the network began operating at about the same time that the library was putting in terminals for accessing their catalog system and the Internet, cooperation between the two programs began immediately. "They have ended up working as a mutual thing," Mascott says. With easy links on the library catalogs to the Seattle Community Network, the library provides the public access terminals necessary for a community network to thrive. As Mascott explains, "The library has always been a part of SCN. It is an integral part of the project. We have adopted the library rules in which reaching the public is a necessary part of the program." In return, the SCN offers email accounts and provides ongoing training for library users. These "Roadshows," made up of traveling teams of computer instructors, visit community groups and branch libraries spreading information about this new technology. Mascott explains that the library and SCN "have blended in together to serve common purposes."

Despite the early assistance from the Seattle Community Network, requests for training were still going unanswered. In response, Shelley Adatto, an SPL librarian, began organizing classes in November 1993. By early 1994, according to Adatto, "the classes just blossomed." Under a new name—Drivers Education on the Information Superhighway—the classes have increased from two or three a month to 25 90-minute classes with hands-on training every month. In response to demand, the SPL began offering the same class at several branch libraries.

Since Drivers Ed began, the SPL has added targeted training, for example, with the Seattle Arts Commission and other arts organizations. The library has also trained groups

of seniors from retirement centers on navigating the Internet and is pursuing training for the visually impaired.

According to Adatto, "Libraries are to help people look forward in their lives. The Internet is embellishing on that—we are helping people to become comfortable with new technology, educating people to look forward in their lives. I sense that this is a continuation of what libraries are all about, even if the technology is all very new."

The Center for Technology

Opened during 1995, the Center for Technology, with Willem Scholten as director, is designed to "function as a catalyst and linking agent, bringing together the needs of the public, the skills of information professionals and the products of high technology companies." It completes a triangle of services by complementing the Center for the Book and Center for Literacy Advocacy. This innovative approach to library organization ensures that technology, literacy, and reading become integrated parts of both the library and the various communities that SPL serves.

The goal of the Center for Technology "is to apply state of the art information technologies to accomplishing the traditional purpose of the public library" by

- Supporting lifelong learning
- Encouraging reading
- Providing information for life decisions
- Supporting democratic participation.

One of the first events the center contributed to was the Mark Twain project, featuring a 20-minute presentation by historian George Frein, who dressed, spoke, and acted like Twain himself. While Franklin high school students asked questions of Mark Twain from the library auditorium, Rainier and West Seattle High School students participated over an Internet videoconference network, the Experimental Multimedia Network.

The collaborative project reflects the integrated approach the Seattle Public Library is taking toward technology. The Living History Project, for example, organized by the Center for the Book, brings literary and historical figures "alive" through live performances by humanities scholars. The "Virtual Learning Community," which carried the presentation over the Internet, is a joint project sponsored by various organizations, corporations, public schools, and local government. In addition, the Center for Technology has made electronic versions of several of Mark Twain's books available on their World Wide Website. The Mark Twain project is an excellent example of using technology and telecommunications as a tool to not only enhance programs, but cement relationships between community players.

The hardware

The Seattle Public Library's Internet connections comes via a T-1 feed. For the Mark Twain project, West Seattle High School and the Rainier Beach Library were linked to the central library with T-1 lines. Plans include connecting the High Point Public Library with a T-1.

One of the community players is Jim McConnell, principal at West Seattle High School, who comments on the project's impact on the school. "We are now able to utilize technology in ways we previously couldn't." Cooperating with the library "is really opening the eyes of our teachers." The preparation the students and teachers made alone justified the project: "We're primed to do it again—this was kind of a teaser, it is whetting our appetites."

As with most of the programs, the emphasis and the strength is not the technology itself but how the technology is used. As Scholten explains, "This was the first real attempt to marry literature and technology. However, while the hype is on the technology side, the story is way bigger than that. This was the first act of collaboration in which kids were creating content." The results of the discussion—questions, comments, and all—were placed on the World Wide Web, available for everybody with access to the Internet to read and watch.

> "The library of the future must serve the entire spectrum of library users, from elementary and secondary students to university scholars, from the general reading public to the technical specialist, providing seamless access to all fields of knowledge."
> —*Willem Sholten, former director, Center for Technology*

Creating a community information network

With the Rainier Beach Library and West Seattle High hooked up with high-speed data lines, the Seattle Public Library is moving toward a broadband community information network. This project has the potential to greatly expand education, information, and communications opportunities.

Although Willem Scholten has moved on, the library continues the important collaborations that make Seattle a valuable example of public access to technology.

The Carnegie Library of Pittsburgh

The Carnegie Library and the Three Rivers Freenet

Many individuals benefit from having access to the Internet, which provides information and answers from around the world that were inaccessible only years earlier. And as the technology program at the Carnegie Library of Pittsburgh, CLP (www.clpgh.org), demonstrates, public libraries can significantly enhance this resource by using it in ways that may seem counter-intuitive.

Although creating international "virtual" communities is the rage among Internet aficionados (and working over long geographic distances coincides with the Internet's design), the CLP recognized that nonvirtual, local communities are often underserved on the Internet. In an effort to address the needs of the local community it has been serving for over a century, the CLP worked toward an electronic community model that more closely resembles a neighborhood information infrastructure than a national one.

CLP, in collaboration with the Commission on the Future of Libraries in Allegheny County and the Allegheny County Library Association, expanded CLP's automation program into an ambitious, $11 million dollar Electronic Information Network. When complete, the computer network will link Allegheny County's 39 public libraries and 1.3 million people to each other and local community resources—in addition to the Internet and the World Wide Web.

Building a technology program

Technology is not new to CLP. In 1993—after nearly a decade of experience using an automated library system and an online catalog—the library decided to augment its electronic services by connecting to the Internet. According to Dan Iddings, assistant director for networked and automated services, the goal was to provide staff with Internet accounts, which they would use to offer mediated access to library users. In addition, email accounts provided a way for staff to communicate with each other and with librar-

ians and others outside the CLP system. By 1994 the system had expanded to allow direct, unmediated public access to the Internet through a menu in the library's online catalog.

Three Rivers Freenet (trfn.clpgh.org)

Soon after establishing Internet access, the CLP, in cooperation with the University of Pittsburgh School of Information Sciences, received an LSCA grant through the Commonwealth Libraries of Pennsylvania to establish the Three Rivers Freenet (TRFN). Unlike many libraries cooperating with local community networks, the TRFN is actually owned and operated by the Carnegie Library of Pittsburgh. Workstations located in the library provide access; in addition, completion of the Electronic Information Network will make 1,100 workstations available in libraries throughout the county.

"We felt that organizationally, CLP was in a position to provide the service and access, and that we were in a position to sustain it," says Iddings. "We knew that local community information was missing on the Internet. You can often find national resources, of a broad scope, but it is often hard to find where these services are at a local level. For example, an Internet search on homelessness links to many national programs, but you can't find a local shelter's address." The TRFN is embarking on a project designed to assist local nonprofits in creating content for TRFN. With the help of a large team of volunteers, Susan Holmes, the TRFN project manager, is giving local organizations free email accounts, ten megabytes of web server storage space, and technical assistance. Before the program became operational, 125 nonprofits had already expressed interest.

According to Susan Holmes, "volunteers are often the backbone of most freenets." The Three Rivers Freenet is no different. The volunteers receive free email accounts, work at a variety of tasks, including training and outreach, and may soon help maintain the website. The freenet plans on assigning qualified volunteers the duty of maintaining the content of each subject page.

Bridging the Urban Landscape (www.clpgh.org/exhibit/)

Alongside the Three Rivers Freenet, the library's Pennsylvania Department is creating a different kind of locally relevant resource. In October 1994 the library, in cooperation with Common Knowledge: Pittsburgh (CKP), received an NTIA grant to "electronically bridge the urban landscape." The Pennsylvania Department houses diverse materials pertaining to western Pennsylvania and Pittsburgh history, including a vertical file with clippings and pamphlets, and a photographic collection of images from the late nineteenth century through the mid-1970s.

According to Barry Chad, assistant head of the Pennsylvania Department, the "explicit and implicit interrelatedness of the materials in the collection" made it a natural candidate for digitizing. Using "hypertext," a protocol familiar to most World Wide Web surfers, information can be easily cross-referenced. In the clippings files, for example, articles on the city's Mt. Washington community refer to "McArdle Roadway." Using hypertext, a user can simply click on "McArdle Roadway" and receive new information regarding that street. The biography files can be consulted for information on the McArdle who gave his name to the thoroughfare. Chad continues:

> *The knowledgeable librarian makes these connections for the patron and presents the patron with three files full of paper—one on Mt. Washington, one on McArdle Roadway, and one on Peter J. McArdle. In hypertext, the knowledgeable librarian, once again, simply links the three elements together electronically—providing access to biographical information, traffic, and/or construction information, information on the interplay of McArdle Roadway with the neighborhood which it traverses, and also photographs of the neighborhood past and present. The [hypertext] links can be to full text or to citations.*

Community impact

The Pittsburgh Children's Museum
"The technology just isn't there for middle-school students," says Jane Werner, director of exhibits and programs at The Pittsburgh Children's Museum. "Every educational institution should be introducing computers to kids and giving them the opportunity to mess around on them." With the help of the Carnegie Library of Pittsburgh, The Pittsburgh Children's Museum will be creating "more than a brochure" for children surfing the web and learning how to use this new technology. The content will be educational and local in focus.

Phipps Conservatory (trfn.clpgh.org/orgs/phipps/)
According to Robert Alexander, head of education at Phipps Conservatory, the Three Rivers Freenet is "one of the pluses of being in Pittsburgh. There seems to be more of a willingness to take advantage of this technology here than in other places." Having a website "helps us get out information about our conservatory to people in the region and outside the region. We provide information such as our hours, programs, and newsletter, plus pictures. It also helps having access available at the library."

Mom's House (trfn.clpgh.org/orgs/momshouse/)
"Our library is doing a valiant job dealing with this new information technology," says Kathy Klocek, director of development at Mom's House, a support system that helps low-income parents who are still students stay in school. "The library understands its mission very well—to get information out to people, whether it be in books, tapes, videos, or on the Net. The library used to be all books, now it's really changing."

According to Klocek, "Having our own website will help get the word out about our services. Many people surfing the Net are younger people—students, friends, or relatives who need our services." Free access at the library gives access to many young people without the resources to surf the web .

Pittsburgh AIDS Task Force (trfn.clpgh.org/orgs/patf/)
The Pittsburgh AIDS Task Force offers services to People With AIDS (PWAs) in 11 counties. Tammy Frech, public information coordinator for the task force, stresses the need for confidentiality. "People are afraid to ask for information. If they can do it over a computer, however, it is anonymous." Furthermore, she continues, because it is a library program "chances are there's a computer in the neighborhood that they can use for free."

"What they're doing with the freenet is terrific," Frech continues. "They loaned us a volunteer to get the web page started. Already we have more coming out of the woodwork to help with the HTML. Plans are underway to expand the site to include the AIDS walk in June. Having that up on the freenet will open it up to more people that wouldn't have heard of it."

Several months after the Pennsylvania Department approached the library's administration about such a project, the administration was approached by Common Knowledge: Pittsburgh regarding the possibility of an online collaboration—specifically the presentation of images on the web. A grant application to the U.S. Department of Commerce, National Telecommunications and Information Administration (NTIA), led to initial funding.

With the Three Rivers Freenet providing up-to-date information about Pittsburgh and the community, "Bridging the Urban Landscape" focuses on the historic. Textual highlights of the exhibit include a newspaper account of Abraham Lincoln's visit to

Pittsburgh in February 1861, an account of the city's Great Fire in 1845, and a 1909 essay on social conditions. According to Chad, "The future is open-ended. With a corps of volunteers to enter in text and scan in images, the task of putting all the neighborhoods effectively online—all of historic Pittsburgh into cyberspace—begins." Why is this the job of the library? Chad continues, "If the world is experiencing an electronic transformation in the way it organizes, stores, and presents information, so certainly must libraries and in various ways."

Plans: The Electronic Information Network

The county's public libraries have embarked on creating a comprehensive Electronic Information Network (EIN) (www.clpgh.org/ein/) that will provide all residents "with equal access to the materials that the information revolution is producing." The objectives include:

- To provide 39 libraries in Allegheny County with the hardware, software, and telecommunications equipment to build a network of 1,100 workstations
- To compile a comprehensive online catalog for all participating libraries
- To plan ongoing expansion of the network, such as links to area schools and local governments.

"One thing that surprised us," according to Iddings, was that "the money was easy to raise. Once we made the case for the need, the funding agencies, both private and governmental, all jumped on the bandwagon." The funding process was assisted, he continues, "by two champions, Frank Lucchino, Allegheny County Controller, and Dr. Doreen Boyce, president of the Buhl Foundation. These two civic leaders recognized the need early on, and did much of the convincing." Funders responded to the need for the EIN as primarily an economic development project. According to Iddings, "broad open access is seen as economically important."

According to Jane Werner, "I really think that it will come down to people who are technologically literate and those that are not. I think libraries can play a big role in getting people into this technology so that they can really understand it."

La Plaza Telecommunity

Taos, New Mexico

Just as many public libraries and community organizations are rapidly discovering the need for technology, many "technology" projects are making significant strides toward reaching the community. The La Plaza de Taos Telecommunity, for example, started as a technology program and has transformed into a full-fledged community development project. As with many such projects, the public library has been involved in varying degrees from the beginning.

According to Patrick Finn, former managing director of human and organizational development, the idea of a community network started in 1993, with a few people sitting around the table saying, "Gosh wouldn't it be great to have Internet access? Maybe we can all pitch in to buy a T-1."

"I didn't even know what a T-1 was at that point," Finn admits, referring to the high-speed phone line used to connect community networks with the Internet. Nonetheless, Finn and several others put their heads together financially, politically, and technically to create the La Plaza Telecommunity Center, launched in December 1994. The network uses

technology "to help people accomplish their personal and public goals and empower communities to solve the difficult problems they face."

The network has expanded to three computers connected to 26 lines, and has extended to two remote sites outside of the local calling area (Pnasoc and Questa). As part of an agreement with the remote sites, free access to the La Plaza Community network is provided through school district computer labs. In exchange each school district has agreed to open their labs to the general public. In Taos, public access terminals are available at the La Plaza Telecommunity Center and the Taos Public Library.

Funding and partnerships

According to Richard Bryant, former managing director for projects and research and development, the major initial funding was a $250,000 grant from the state legislature. Additional funding from Los Alamos National Laboratory was also helpful. Eventually, the W. K. Kellogg Foundation and the National Telecommunications Infrastructure Administration added funds for developing the network. The Apple Library of Tomorrow (ALOT) program provided $16,000 in computer equipment to help connect the network with the library. While financially smaller than several other grants the network has received, the ALOT grant helped foster an important relationship between the network and the library and the network and the community. As Bryant notes, the ensuing cooperation "was a mutual validation of our technology. The library's position as a well-respected institution of long standing made this collaboration important."

Nuts and bolts

La Plaza runs on three SGI servers, offering both text- and web-based access to local community information and the Internet through a T-1 line. In addition, La Plaza is developing a line-of-sight, 160 KB wireless connection to the public library. The community network offers full Internet services, including shell and PPP accounts with access to FTP, telnet, email, and the World Wide Web (via Netscape).

Creating a virtual library

La Plaza is taking on the functions of a "virtual library" for northern New Mexico. Tracy McCullam, director of the Taos Public Library, claims that his initial involvement with La Plaza was only supportive. "In the beginning, it was a matter of knowing that the technology they were planning on developing would benefit the library and community. I was mostly being supportive without directly being involved. I became more involved as time went on."

According to Patrick Finn, McCullam's role has been important. "He has a lot of experience in Taos, which is a unique community in lot of ways. As director of the library he has a lot of experience working with people in the community involved in nonprofit and governmental organizations."

McCullam has helped to bridge the gap between what the library does and what the community network does. "I became naturally more involved as the project developed, always with the overview of how it would interface with the library to provide services to public. . . . I could see it making library services more available to the local community and to the larger community out there accessing La Plaza."

This view of librarianship, combined with La Plaza's commitment to reaching the community, is creating a new model of collaboration. According to McCullam, the goals of community networks "have been identical to those of the library information industry. We see the two entities working hand in hand. Organizations like La Plaza provide the means for facilitating information exchange, and the libraries have the information."

The network is developing content. As part of its funding from the National Telecommunications Infrastructure Administration, La Plaza is providing information about diabetes in a storytelling format, as vignettes in cartoon form about the Montoya family and how they deal with diabetes, as well as medical information.

In addition, putting resource material online is a part of their W. K. Kellogg Foundation initiative. "We're small," Finn cautions. "We've put up quite a bit of information, but we don't have the staff to keep up. The goal of the second year of the initiative is to train the community to format content and have them begin to do their own home pages, create their own projects, and maintain areas they are interested in. We expect to get a lot more diversity and build community ownership."

As with several other community networks (and most public libraries), La Plaza is making the virtual library local-centric. A tour of the website reveals an enormous amount of information, with most categories divided into four sections: Taos, New Mexico, national, and international. This division clearly identifies the importance of geography despite the supposed "elimination of physical place" encouraged by the Internet.

The reaction in Taos and beyond

With a population of 4,300, no commercial airport, and a tourist-dominated economy, Taos is not a place where you would expect to find a high level of telecommunications literacy. As Linda Stenseth, an avid La Plaza user, acknowledges, "One of my son's teachers said that she thought the World Wide Web was the instrument of the devil."

But La Plaza is rapidly changing the equation. "I was very resistant to the Internet. I would never have gotten on the Internet if it hadn't been for the classes offered by La Plaza." She continues, "Everything else is a long-distance charge." Having access to La Plaza was "instrumental in getting my son into the college program he is in."

Larry Fowler, deputy district attorney and criminal justice professor, also sings praise for La Plaza. "I've used it extensively for two years. . . . I did a lot of research on genetics when I was teaching a course in forensic science. I've also used it extensively for criminal justice materials (as well as for chasing fishing stories)."

Fowler has also put La Plaza to work at the DA's office. "Typically it's 30 days for cases to arrive in print. Now I can get a case online in ten minutes. To date," he continues cautiously, "everything my coworkers have asked me for I've found."

Many Taos residents use the personal email accounts La Plaza offers to subscribe to electronic mailing lists—listservs—which provide the means for groups to hold discussions electronically. Linda Stenseth, for example, has used cancer-related listservs to gather information about treatments for her husband. "It's provided me with information that I've given to the doctors which has influenced my husband's treatments. I've been in contact with prominent doctors all around the country. It blows me away because they write back, providing me with a lot of information."

In addition, La Plaza hosts several local listservs ranging in subjects from media literacy, to youth in Taos ("Screaming Teens"), to gay and lesbian issues ("New Mexico Queer Net"). As Larry Fowler comments, these local listservs give people around town another forum for communication. "The greatest thing is to provide email around town, here it's really important."

Hondo fire

Some of the potential of a community network surfaced on May 5, 1996, when a forest fire broke out in the Carson National Forest engulfing over 7,000 acres of land, including private property. With many families burned out of their homes and many other homes in the path of the blaze, there was a tremendous need for up-to-date information on the

Politics

A state grant provided the initial funding for La Plaza. According to Bryant, Sen. Carlos Cisneros and Rep. Robert Gonzales did not fully understand the technology, but had a sense that it was important and were instrumental in passing the funding authorization. Cisneros and Gonzales later introduced a Joint Memorial, passed in 1995, that recognized the "vital importance of information infrastructure, information privacy, and access to public interest information" through new technologies. Specifically recognizing the achievement of La Plaza, the memorial resolved that "the policy of this state be to facilitate the provision of access for all New Mexicans to local, state, and national information infrastructures." Finn points out that it is just a memorial, not a binding law, but it establishes "an attitude that will set the stage for further activity."

status of the fire, information and referral concerning shelters and emergency services, as well as coordination of volunteers and donations.

At first, Richard Bryant recalls, there was little interest in taking advantage of La Plaza's communications infrastructure, because the American Red Cross, U.S. Forest Service, health providers, and news outlets did not understand the potential. According to Patrick Finn, they had to print out copies of their web page and walk them over to the radio station in order to make them see the value of using the Internet in an emergency.

Once the organizations saw the value of cooperating via the Internet and taking advantage of La Plaza's infrastructure, they acquired a real-time information service that gave access to local radio reports, the U.S. Forest Service, and information for local emergency service providers. The providers also had an opportunity to specify needs, allowing people from all over the world an opportunity to send help. A new listserv enabled people who couldn't get through on the phone to inquire about friends and relatives.

The influence of the library

At La Plaza, the organizers recognize the need to work not only with the local library, but with the library profession as a whole, including the University of Michigan School of Information and the Library of Congress. They are also planning outreach with the Taos Public Library.

Contrary to the myth of the obsolete library, initiatives like La Plaza reveal that public access to high technology is about public access—an issue that still requires public library expertise.

three

3

BEST COPY AVAILABLE

Additional resources

Networked information makes all types of libraries more interdependent. While this report focuses primarily on public libraries, state libraries and academic libraries also are part of the fabric of public access to information and communications. State library leadership, for example, will be essential in spreading information and communications technologies among public libraries. Academic libraries and their parent institutions are providing research and leadership in the advanced application of information technologies. Foundations and businesses are supporting the development and implementation of new approaches to library programming made possible by expanding technological capabilities. Associations are playing a key role in supporting libraries' movement into the twenty-first century. All of these activities come together to further the effectiveness of libraries.

Access for All
www.accessforall.org
Access for All is a New York coalition of organizations formed to share information and resources concerning legislation and federal policy, to make this information available and understandable to the general public, and to advocate for telecommunications policy in the public interest. Organizations participating in Access for All include Manhattan Neighborhood Network, New York Foundation for the Arts, Paper Tiger TV, the Association of Independent Video and Filmmakers, Libraries for the Future, Deep Dish TV, and Media Alliance.

American Library Association (ALA)
www.ala.org/index.html
The American Library Association (ALA) is the oldest and largest library association in the world, and its 57,000 members represent all types of libraries—public, school, academic, state, and special. ALA offers an extensive array of programs, educational opportunities, conferences, and publications for librarians and the general public interested in library issues.

Association of Research Libraries (ARL)
arl.cni.org
The mission of the Association of Research Libraries is to shape and influence forces affecting the future of research libraries in the process of scholarly communication. ARL programs and services promote equitable access to, and effective use of, recorded knowledge in support of teaching, research, scholarship, and community service. The association articulates the concerns of research libraries and their institutions, forges coalitions, influences information policy development, and supports innovation and improvement in research library operations. ARL is a not-for-profit membership organization comprising the libraries of North American research institutions and operates as a forum for the exchange of ideas and as an agent for collective action.

Benton Foundation
www.benton.org
The Benton Foundation's Communications Policy Project promotes public interest values and noncommercial services for the National Information Infrastructure through research, policy analysis, print, video and online publishing, and outreach to nonprofits and foundations. Its website contains updates on communications policy and upcoming events; a forum for discussion; publications such as bulletins, policy briefings, and working papers; and links to hundreds of online communications and public interest resources.

CAUSE
cause-www.colorado.edu/
CAUSE's mission is to support the transformational changes occurring in higher education through the effective management and use of information resources—technology, services, and information.

Center for Technology in the Public Library
www.spl.org/cfthome/cfthome.htm
The Center for Technology in the Public Library is one of three centers which can shape the future of the Seattle Public Library. The Center will function as a catalyst and linking agent, bringing together the needs of the public, the skills of information professionals, and the products of high technology companies. Research and development efforts emphasize projects of special interest to Seattle, but which can also be replicated in other libraries. All library services and modes of service delivery are affected by these technological advances, as are the community institutions and groups that use library services.

Coalition for Networked Information (CNI)
www.cni.org
The Coalition for Networked Information was founded in March 1990 with a mission to help realize the promise of high performance networks and computers for the advancement of scholarship and the enrichment of intellectual productivity.

The Commission on Preservation and Access
www-cpa.stanford.edu/cpa/index.html
The purpose of the Commission on Preservation and Access is to foster, develop, and support systematic and purposeful collaboration among universities, libraries, and allied organizations to ensure the preservation of the published and documentary record in all formats and provide enhanced public access to preserved materials through an open distribution system.

Corporation for National Research Initiatives
www.cnri.reston.va.us/
The corporation is a nonprofit organization dedicated to formulating, planning, and carrying out national-level research initiatives on the use of network-based information technology. CNRI is concentrating on research and development for the National Information Infrastructure, working collaboratively with industry, academia, and government.

Council on Library Resources (CLR)
www.sils.umich.edu/CLR/
The Council on Library Resources, Inc., is a private, nonprofit 501(c)(3) operating foundation established in 1956 to look toward the future on behalf of libraries, to address problems experienced by libraries in the aggregate, and to identify innovative solutions. Over the years, it has helped libraries take advantage of emerging technologies to improve operating performance and expand services for an increasing number of users.

In November 1996 CLR published *Public Libraries, Communities, and Technology*, 12 case studies on public libraries that have developed innovative services, that use emerging technologies to serve the local community, or that have been influential in addressing public policy for information services in their communities. The report was made possible with funding from the W. K. Kellogg Foundation.

Library Initiatives for Electronic-Information Technologies
www.sils.umich.edu/CLR/
The W. K. Kellogg Foundation and the Council on Library Resources want to help libraries identify and share ideas on the electronic-age innovations being undertaken to bring communities into the twenty-first century. Libraries can take leadership roles as advocates for their communities by determining what kinds of information will be most helpful, how to organize it for ready use, and how to increase access to information. Find out what is being done in your state, region, or around the country.

EDUCOM
www.educom.edu/
Through direct services and cooperative efforts, EDUCOM offers leadership and assistance to its member institutions in order to address the critical issues surrounding the role of information technology in higher education. EDUCOM is committed to fulfilling the potential of information technology to realize education that is active and learner-centered, free from traditional constraints of time and space, lifelong and collaborative, cost-effective, responsive, dynamic, relevant, and accessible.

Harvard University's Information Infrastructure Project: Digital Libraries
www.ksg.harvard.edu/iip
Based at the Kennedy School, this four-year project on policy development for the digital library was funded by the W. K. Kellogg Foundation. The project will investigate financial, legal, and institutional issues in the development of digital libraries for education and research.

W. K. Kellogg Foundation
www.sils.umich.edu/CLR/kellogg.html
The W. K. Kellogg Foundation was established in 1930 to "help people to help themselves through the practical application of knowledge and resources to improve their quality of life and that of future generations." As a private grant-making organization it provides seed money to organizations and institutions that have identified problems and designed constructive action aimed at solutions.

Libraries for the Future
www.lff.org
Libraries for the Future is a national non-profit organization of public library advocates. LFF educates and activates current and potential library users to become advocates and to enhance the relationship between libraries and communities, particularly those that lack resources. The LFF program promotes community participation and universal access to literacy, lifelong learning and information, essential tools for democracy.

Andrew W. Mellon Foundation
www.mellon.org/about.html
Under a broad charter, the foundation makes selective grants to institutions in higher education, cultural affairs, the performing arts, population, conservation and the environment, and public affairs.

Special Library Association (SLA)
www.sla.org/
The Special Library Association is an international professional association that represents more than 14,000 experts who collect, analyze and evaluate, package, and disseminate information to facilitate accurate decisionmaking. SLA's members are employed by corporations, private companies, government agencies, technical and academic institutions, museums, medical facilities, and information management consulting firms.

Urban Libraries Council
www.clpgh.org/ulc/
The Urban Libraries Council (ULC) is a nonprofit association of large public libraries and corporations that serve them. ULC was organized to solve common problems, better understand new opportunities, and conduct applied research that improves professional practice. ULC's projects and programs include: research studies documenting key dimensions of off-site services, collection development trends, and governance issues, as well as technology training for systems staff of member libraries. Its areas of program and research interest include public policy issues influenced by new technologies such as equity of access to electronically delivered information, copyright, and changing roles of state and local governments.

Libraries

The following list provides a sample of library programs offering public access to technology. It is divided according to type of program offered in order to show the diversity of technology available in public libraries. Many of the programs fit into more than one category; some even fit into all the categories. The purpose of the categorization is not to develop a new taxonomy but to highlight the many ways libraries are offering public access to technology.

Stand-alone computer labs

Allen Public Library, North Carolina
A branch of the Montgomery County Public Library, the Allen Public Library has a small computer lab for public use: 12 donated 286 computers and $6,000 in software. Funding was private. The lab has been used by summer writing classes, summer camps for children, adult classes through the Arts Council, staff development for the Sandhill Regional Library System, and by individuals. The staff hopes to promote the program with patrons and offer hands-on classes for small groups. Contact: Carol G. Walters, director of libraries, Sandhill Regional Library System, ph: 910.997.3388, fax: 910.997.3388

Greensboro Public Library, North Carolina
At the Chavis Branch of the GPL, computers are used to work with academically at-risk students in an after-school program, adult learners in a GED class, learners in an ESL program, adult new readers, participants in a community empowerment group, people seeking job and career counseling, parents of Headstart children, as well as several other programs. Contact: Brigitte Blanton, computer coordinator, ph: 910.373.5838

Jackson George Regional Library, Mississippi
All eight branches of the JGRL have at least two DOS machines running Word Perfect 5.1, Harvard Graphics 3.0, and Typing Tutor (as well as tutorial software). These computers are connected to printers and are open for free public use. In addition, the Headquarters Branch offers three computers with CD-ROM access to Books in Print, Movies in Print, the Phone Book, and many other titles. One machine is specifically set up for genealogy research. The JGRL employs QuintAmerica, a consulting company, to maintain the system. Contact: Rosemary S. Martin, ph: 601.769.3220

Meriden Public Library, Connecticut
The Meriden Public Library has a six-year-old computer center that provides access for patrons to write resumes, learn software, and perform other computer-related tasks. Often used in conjunction with the Job Seekers Center, the Computer Center is thriving. While the library has a dial-in card catalog, the Computer Center has no telecommunications capabilities. Contact: Claudette Hovasse, ph: 203.238.2344 x33

Internet access

Access Colorado Library and Information Network (ACLIN), Colorado
ACLIN's official beginning was in June 1990, when Governor Romer signed House Bill 90-1230, which declared that "access to computer information should be equal throughout the state, regardless of place of residence or economic status." Under the supervision of the state librarian, ACLIN provides statewide free access to library and information databases, including school model programs and state legislation.

Baldwin County Library Cooperative, Alabama
Using creative funding methods, such as allocating a portion of cable franchise fees to support libraries and placing a surcharge on video tapes, the Baldwin County Library Cooperative has begun plans to join independent library computer systems into one wide-area network which will provide access to all the catalogs, the Mobile Area Freenet, and the Internet. Contact: Martha White, ph: 334.947.7632

Braille Institute Library Services, California
This regional Library for the Blind and Physically Challenged is preparing to provide access to electronic information for its 25,000 patrons over the Internet. Most of the patrons do not have the adaptive technology required to enable them to retrieve the output of a search in their desired format. A telecommunications device will enable them to call an Interactive Voice Response (IVR) machine to communicate with the library system about their resources and services. Patrons will use the telephone key pad to transfer information. Contact: Henry C. Chang, ph: 213.660.3880

The Cochise County Library District, Arizona
The Library District has proposed a project in which it will install an online, integrated automation system to link the 15 public library sites serving the 105,000 residents of rural Cochise County. The joint system will provide more effective sharing of limited resources, streamlining of library procedures, and public access to interactive technology. A primary component of the system will be the provision of innovative local and state government databases relating to a variety of community and economic development objectives. Finally, the system will provide all users with a gateway to the Internet. Contact: Donna A. Gaab, ph: 602.432.9250

Expanding the Vision, Georgia
Expanding the Vision is one of 14 projects funded in 1993 to provide "cost free" public access to the Internet and information resources through PeachNet and the public library system in Georgia. The two-year pilot project, which includes five libraries and three schools, started in 1994 as a prelude to a statewide rollout funded in 1996. The statewide plan is designed to provide a hub or node in each county, thereby eliminating long distance charges and user fees for Internet access. The libraries and schools involved in the project are located in rural areas and regions of limited information technology. Contact: Susan A. Stewart sstewart@mail.public.lib.ga.us

Hawaii FYI, Hawaii
Part of the Hawaii Wide Area Integrated Information Access Network (HAWAIIAN), Hawaii FYI allows residents to access a variety of international, national, and state information. Funded and created by the state legislature, FYI provides, among other services, access to legislative information and to the University of Hawaii library catalog. Access is available through public terminals located at each public school and library and via dial-up lines.

InFoPeople, California
library.berkeley.edu:8000/
See profile.

Iowa State Library, Iowa
Plans are underway to link all of Iowa's public libraries to a fiber optic network project aimed at connecting the state's 99 counties. Iowa State Library has received a $2.5 million grant from the U.S. Department of Education to fund the state library's plan to connect to the network. Iowa libraries already have access to a CD-ROM system called Iowa Locator and have two interlibrary loan networks. A key component of the project will be coordination of information services provided by county extension offices and public libraries in order to maximize citizen access to information. Other components include automating the state library's medical and legal materials and making the collections available statewide, and building an ICN interactive voice and video meeting room at the state library for training, continuing education, and statewide meetings. Contact: Sharman Smith, ph: 515.281.6191

Lincoln County Public Library, Montana
www.libby.org/Library/welcome.html
In January 1994 several individuals formed the Lincoln County Technology Group (LCTG) to bring telecommunications service to the county. As a result of their work, Kootenet was established, which connects all three libraries (Eureka, Libby, and Troy) to the Internet. Twelve workstations available to the public among the three libraries offer Netscape, newsreaders, FTP, and email (dedicated for Kootenet members and visitors with remote accounts). Contact: Greta Chapman, ph: 406.293.2778, email: gchapman@libby.org

Louisiana Online University Information System (LOUIS), Louisiana
LOUIS recently installed a workstation in every parish (county) in Louisiana. These PCs are located in a public library (usually the main branch) and offer direct access to the Internet via the World Wide Web and gopher, access to UMI full text journal articles via Dynix Vista, and access to LOUIS university catalogs. Many of the terminals are still located in technical service areas, but libraries are being encouraged to offer them to the public.

Metro Net, Michigan
metronet.lib.mi.us
Incorporated as a Michigan Nonprofit Public Library Consortium, Metro Net is made up of eight Detroit area public libraries, which have free public and staff accounts on the Metro Net Host Server, available on terminals and PCs at each site, and via dial-in nodes. The libraries contributed 90 percent of their 1993–94 state Swing Aid

to purchase a Sun SparcStation, join the Merit network, and buy the hardware for each library to have a single connection to the Internet. Each member pays the consortium an annual membership fee as well as a dedicated portion of State Aid. Contact: Gerald M. Furi, Systems Administrator, ph: 810.553.0300, email: gmf@metronet.lib.mi.us

Nebrask@ Online, Nebraska
www.nol.org
See profile.

Sailor Project, Maryland
sailor.lib.md.us/
Sailor went online in July 1994. Based in the Enoch Pratt Free Library, the project provides access to a gopher site (with web projects coming) through 15 local access numbers available in 19 out of 24 counties. Local libraries have been involved in development by offering training. The University of Maryland has also provided technical support. Additionally, involved libraries (Enoch Pratt Free Library and Baltimore Country Public Library) are making Internet accounts available to patrons. Contact: bs91@umail.umd.edu

Statewide Library Electronic Doorway (SLED), Alaska
sled.alaska.edu
SLED began in April 1994, funded and developed by the Alaska State Library and the Elmer E. Rasmuson Library of the University of Alaska, Fairbanks. SLED provides access to online information from libraries, federal and state government, community networks, and the Internet (www, lynx and gopher). Of Alaska's approximately 600,000 residents, nearly 87 percent are served by SLED via a local call. Contact: Susan Elliott, Information Technology Librarian, Alaska State Library, ph: 907.269.6567, email:susane@muskox.alaska.edu

Vermont Automated Libraries System, Vermont
dol.state.vt.us/
See profile.

Albuquerque Public Library, New Mexico
The Albuquerque Public Library and New Mexico Technet have collaborated on a program called "Connections 21" in the Greater Albuquerque area. The project began by placing PCs in all school libraries. The computers provide access to the Technet network, allowing both Internet access and direct access to the Albuquerque Public Library card catalog. Children can apply for a library card, search the catalog, and order books online. The books are then delivered to the student at the school. All costs for the service are donated by the library and New Mexico Technet. The program operates in more than 120 schools and half a dozen community centers. Contact: Terry Boulanger, email: boulan@technet.nm.org

Beloit Public Library, Wisconsin
The Beloit Public Library has established a coalition of educators, business people, librarians, city officials, and others to develop an Electronic Community Bulletin Board system that will provide access to local information, local discussion groups, and a path to the Internet. Local government entities and agencies will keep their information up to date on the BBS. Contact: Peg Bredeson, ph: 608.364.6730, email: bredeson@acad.beloit.edu

Burlington County Library, New Jersey
burlco.lib.nj.us/
The Burlington County Library System provides free access to the World Wide Web for cardholders at its main facility in Westampton. Six computer workstations are available for access to the Internet; three are *multimedia equipped*. Web access for the public began in September 1995. The Burlington County Library is upgrading its telecommunications system to a Frame Relay network with a T-1 line to the Internet, which will bring public access to five branch libraries. A sixth branch will have Internet access through a dial-up connection. The Burlington County Library System is publishing local resources on the web and is mounting in-house newsletters and other materials on the website. Contact: Kim M. Ruth, Management Specialist, ph: 609.267.9660; email: kruth@burlco.lib.nj.us

Cambridge Public Library, Massachusetts
Through a collaboration between Cablevision and PSINet, two Macintosh workstations are available to the public. Connected via a cable modem capable of speeds up to 300 kbps, these workstations allow library users to explore the World Wide Web and use FTP, gopher, and telnet. The Library worked in cooperation with the Center for Civic Networking, which designed their World Wide Web page. Contact: Elizabeth Dickenson, ph: 617.349.4039

Camden Public Library, Maine
www.camden.lib.me.us
In summer 1995 the Camden Public Library made four Internet computers available to the public in the main reading room. The Internet computers provide access to the World Wide Web via Netscape, Telnet, and FTP. They are connected to the Internet via a 56 kbps dedicated line from the University of Maine. In addition, simple word processing and three CD-ROM programs are available. The library offers free hour-long classes for the public with emphasis on learning Netscape to find information on the Internet. *Staff classes offer extra training.* Funding came from grants and the library's budget allocation for computers and technology. Contact: Heidi Bautista, ph: 207.236.3440; email: bautista@camden.lib.me.us

Cedar Falls Public Library, Iowa
www.iren.net/cfpl
The Library Board voted to support a substantial investment in technology from funds in the library foundation. The library offers one public access workstation for Internet browsing that opened September 1995. Only web browsing through Netscape is available to the general public. The Internet connection is through the Iowa Research and Education Network (IREN), a not-for-profit consortium of librarians from all types of libraries and MIS people from academic institutions. The connection, though dial-up now, will soon be through fiber optics and hard wired. The library will be responsible for building and developing the home pages for all of city government, it will also provide connectivity to the Internet for city employees. For the public, the library has co-sponsored city-wide training programs, some offered at the library—others in other locations. Partners include CedarNet. Contact: Carol French Johnson, Director, ph 319.273.8652, email: cfpljohn@iren.net

Escondido Public Library, California
www.ci.escondido.ca.us
The main library and one library branch are connected to each other and to city hall via high speed lines. The library has begun to implement features of their OPAC (Dynix) such as a calendar of events and an electronic suggestion box. They are also connecting to the Internet with a World Wide Web inter-

face. Other plans include integrating city and community information into the network and working with other city staff, community organizations, and individuals. Within a few years, the library hopes to deliver information services directly to homes and businesses using a city-owned fiber-optic network. Contact: Laura Mitchell, ph: 619.741.4834, email: lmitchell@ci.escondido.ca.us

Fairbanks North Star Borough Public Library, Alaska
www.fairnet.org
The library is one of five community partners in FairNet, a community electronic network in development with funding from the Corporation for Public Broadcasting. The partnership includes the Library, KUAC, the Rasmuson Library of the University of Alaska Fairbanks, the Fairbanks North Star Borough School District, and the United Way Volunteer Action Center. Contact: Sue Sherif, ph: 907.459.1020, email: sues@muskox.alaska.edu

The Farmington Library, Connecticut
The Farmington Library serves a suburban population of 22,500. The library is a member of the CONNECT system which is operated by the Capitol Region Library Council, the regional Cooperative Library Service Unit. CONNECT is a CARL product and links the library not only to fellow CONNECT libraries but also with all other CARL sites throughout the country. Through CONNECT, the library now has access to a region-wide database of clubs and organizations. The library also has graphical Internet access through a local provider that provides ten individual mailboxes, WWW services, and the ability to bring the Internet to the public. The library is planning workshops for local businesses, the Town Hall staff, and the CT Tax Payers Association. Contact: Barbara Gibson, ph: 203.673.6791

Jefferson-Madison Regional Library, Virginia
The University of Virginia initiated a community-wide effort, under the auspices of applying for an NTIA grant in March 1994, for developing a community network. The partnership developed—University of Virginia, J-MRL, the City of Charlottesville, Albemarle County, Sprint-Centel, Adelphia Cable and with supporting partners of the Daily Press, the Association of Realtors, United Way, the Arts Council, the Chamber of Commerce, Monticello and Piedmont Virginia Community College—and committed $250,000 as matching funds for the grant. The effort has been parlayed into $4.2 million expenditure by Sprint-Centel to build a fiber network connecting the University of Virginia, the city, the county, and the library (branches and schools). Renovations—including major rewiring of the 90-year-old central library—took place in fall 1995, when the Community Network-Monticello Avenue Virtual Village (Mount AVV) opened. Contact: Donna M. Selle, ph: 804.979.7151

Glendale Public Library, California
The Glendale Public Library is unusual in that it is the lead agency for the city of Glendale in both development and implementation of electronic information technology. It is the developer and operator of the LNX Systems community information utility, incorporating communications, information, and Internet email services for the community. The library provides Internet training and access at the central library and is developing the city's web home page. It is preparing to implement an internal library network with various internal databases and CD-ROM resources on the city's Ethernet fiber network. Contact: Ruth Thompson, ph: 818.548.2134

Glendora Public Library, California
In 1994 the library received a state-grant-funded microcomputer for providing public access to the Internet as well as other online resources such as America Online and Prodigy. The library's online catalog is already available by modem to every school in Glendora, and to homes and offices, 24 hours a day, seven days a week. In April a grant-funded, five-station computer center opened, providing volunteer-staffed opportunities for parents, children, seniors, and literacy students to learn about computers and CD-ROMs using a variety of tutorial and multimedia software resources. As part of the library's strategic plan, a networked 16-workstation technology center has been designed that will be linked to a similar technology center at the local high school. Contact: Constance J. Tiffany, ph: 818.914.8291

Maggie's Place, Colorado
gopher://peak.ppld.org
Through a computer interface called "Maggie's Place," the Pikes Peak Library District offers a variety of online services, such as community databases on children (the Colorado Springs Childcare database), the Colorado Legislative Database, and commercial databases like Grolier's Encyclopedia. In addition, the district developed a public Internet interface, available through Maggie's Place, called MAGGnet. With a Sun SPARC Classic workstation, owned and operated by the library district, MAGGnet provides gopher-based Internet access to terminals in public libraries and through dial-up lines. Contact: David Clark, Systems Officer, ph: 719.531.6333, ext. 1100, email: dclark@ppld.org

Montgomery-Floyd Regional Library, Virginia
www.montgomery-floyd.lib.va.us
The MFRL staff began Internet connectivity in 1991 via dial-up accounts to VLIN (Virginia Library and Information Network). In 1993 the library was awarded an LSCA grant to establish broadband connectivity to the Internet for library users via the Blacksburg Electronic Village. In January 1994 the Blacksburg Branch Library began offering public access to email, gopher, telnet, and FTP over an Ethernet LAN. The library also provided free weekly training sessions for the public. The MFRL later received an extension LSCA grant to continue the testbed project and offer WWW access. In the first 18 months of the project over 1,000 people were trained on Internet applications. In 1996 the MFRL expanded public NII to the other two branches. A 1995 NTIA/TIAPP grant has allowed MFRL to hire a full-time regional Internet trainer. The MFRL project has greatly increased the network literacy of the community and has helped offset the growing information-access gap. Contact: Steven P. Helm, ph: 540.381.6824, email: shelm@vt.edu

Oakland Public Library, California
The Oakland Public Library provides basic Internet access to users in its branches and via dial-up. Oakland Public also provides dedicated dial-up links to its catalog for several public schools

and has recently expanded this link by converting to the Internet. The long-term goal of the library is to make access to the library available in every classroom in Oakland. Contact: Carl Cousineau, ph: 510.238.6720

Palm Springs Public Library, California
The library's dial-up catalog includes electronic access to city information and social services information, and plans are in place to expand the electronic networking with other health and human service connections. The long-term goal is to provide equal access to information by electronic as well as other means. The library works closely with the county's Regional Access Project, the city's Department of Economic Development, and other agencies to provide access in the library and by remote connection. Contact: Mimi Collins, ph: 619.323.8298

Parmly Billings Library, Montana
telnet://Billings.lib.mt.us
The Wendy's Connections is a private-public program sponsored by Wendy's of Montana. Over a three-year period, 1993 to 1996, Wendy's donated $145,980 to provide library-based access to the Internet, indexes, and full-text magazine articles and community information databases. Access is available through the library's Dynix public-access catalog. The system supports 18 public access terminals, including a VERT/VISTA terminal that assists visually impaired users, and more than ten dial-up lines. Contact: Bill Cochran, Director, ph: 406.657.8292, email: cochran@billings.lib.mt.us

St. Joseph County Public Library, Indiana
sjcpl.lib.in.us
By way of a T-1 line running to the University of Notre Dame, the library has been offering direct high-speed Internet access at the main library and all seven branches, providing library users with access to telnet, gopher, and World Wide Web networking. In addition, three "cluster member libraries" that are outside the library's system, but within the region, have been connected to the network. The library also provides space and a connection to a local nonprofit Internet service provider, Michiana Freenet. In addition, the library has had a home page on the web since 1994, giving Internet visitors access to the library's catalog, numerous locally produced databases (such as the Community Connection, listing local clubs, groups, organizations and social service entities, and the Indiana Legislators Database), and a searchable list of public libraries on the Internet. Contact: Faith D. Fleming, ph: 219.282.4616; email: f.fleming@gomail.sjcpl.lib.in.us

Spokane Public Library, Washington
splnet.spokpl.lib.wa.us/spl.html
In October 1994 Spokane Public Library became the first public library in the nation to install the new Windows-based, graphical user interface (GUI) DRAFind public access catalog. The new PACs allow access to local materials catalogs, extensive magazine indexes, full-text magazine article retrieval and printing capabilities, a local community information network, and the Internet. Using Cabletron, the library designed its own network, linking all branch sites as well as local middle and high schools through a cooperative agreement with Spokane School District 81. In July 1995 the Spokane Public Library installed 20 Internet stations at branches throughout the system and added the Internet to its palette of dial-in services. Contact: Dolly Richendrfer, ph: 509.626.5312, email: drichendrfer@spokpl.lib.wa.us

Taylor Public Library, Texas
spinoza.pub-ib.ci.taylor.tx.us/o/taylorpl/homepage.html
The Internet connection for the Taylor Public Library was the result of a project for the "Introduction to the Internet" class of the Graduate School of Library and Information Science at the University of Texas at Austin. The library's Internet connection is funded by the Taylor Economic Development Corporation and the city of Taylor, with contributions from IBM, Gifts in Kind America, and local donors. In August 1995 the Taylor Public Library set up its own Internet server with an ISDN connection. The library's Internet connection provides a wide range of reference resources for patrons that would not be available otherwise. Contact: Betty Thompson, email: betty@spinoza.pub-lib.ci.taylor.tx.us

Tuscon-Pima Library, Arizona
The Tucson-Pima Library is migrating to a new, integrated online library system. They are planning and implementing strategies which link community and library programs, such as the adult literacy initiative and Homework Help in the Library, with complementary electronic resources and software in such forms as community databases, CD-ROM, Information and Referral Services, the online catalog, and shared access with local schools. Contact: Nedra Kayner, ph: 602.791.4391

Public libraries providing experimental or unique services

Allen County Public Library, Indiana
www.acpl.lib.in.us
The public access cable channel is actually a department of the library. The library gave a proposal to the city for getting connected to the local communications network. Since the city requires the cable company to connect some public buildings, the library succeeded in getting on this list and connecting six branches. In addition, the library opened an Internet computer center in August 1996. Contact: Georgean C. Johnson-Coffey, ph: 219.424.7241 x2273; email gjohnsoncoffey@everest.acpl.lib.in.us

Cedar Rapids Public Library, Iowa
The Cedar Rapids Public Library connected to the Internet on June 4, 1993. In December 1993 the CRPL began offering the Personal Internet Connection (PIC) program whereby the general public can obtain a dial-up account with full Internet access for a fee. This made the library the first Internet provider in the community. The library funded the initial startup, but the program is now self-sustaining and earns additional income for technological improvements in the library. As of April 1996 there were about 240 users of the service. Contact: Bryan Davis, ph: 319.398.5124; email: davis@crpl.cedar-rapids.lib.ia.us.

Glenview Public Library, Illinois
www.glenview.lib.il.us/gpl
The library uses the CATV institutional network for data communications with four local school districts, two municipalities, and an educational organization. All institutions share Internet access. The wide area network service is provided by TCI as part of a franchise agreement. About four years ago, the library was one of the founding organizations of a group called the Glenview Values Project: A Community Resources Effort. This group, composed of representatives of local institutions and agencies (including the mayor, the chief of police, school and park superintendents, and the president of the local clergy asso-

ciation), has identified gaps in services in the community and sought to put people in touch with resources. Contact: John Blegen, ph: 847.729.7500; fax: 847.729.7682; email: blegen@gpl.glenview.lib.il.us

Glenwood Branch Library, North Carolina
With a donation from the Bryan Foundation, the Glenwood Branch Library has opened a Nonprofit Resource Center offering consulting services and customized information for nonprofits. Using HandsNet as their provider, the center will put the Internet to use as an information source as well as an organizing tool. Additionally, the center will use their Internet connection to train members of the community.

The Greene County Public Library, Ohio
www.gcpl.lib.oh.us
As an LSCA grant project, the GCPL is exploring the potential for wireless technology for a countywide network. A Dayton firm (C-Spec) has made a presentation promising a 900 Mhz system which supposedly can bridge a data network of 10 miles. The library has used U.S. Geological Survey Topographic quadrant maps to plot line-of-sight distances and elevation gradients as a preliminary step. The equipment would be somewhat more expensive than standard wide area network routers and bridges, but would allow data to be moved at two megabytes per second—exceeding T1 capabilities. The potential for linking the library with other governmental units using "wireless" will be explored if the test link is successful. Contacts: Ray Mulhern, ph: 513.376.2996 x200; email: rmulhern@gcpl.lib.oh.us

Sacramento Public Library, California
The Sacramento Public Library is an "Education First" demonstration site sponsored by Pacific Bell. The Education First initiative provides ISDN data circuits to schools, colleges, and public libraries throughout the Pacific Bell Service area. As a demonstration site, the SPL is receiving free ISDN and long distance digital telephone services. The library has been provided with equipment and services to establish an Internet connection and to develop remote access to the library's local area network. It has also received a PictureTel videoconferencing system and three AT&T Vistium desktop videoconferencing systems to develop interactive programming. To enhance the Kids' Place program, the SPL will use a LibraryLINK grant to install specially configured, child-oriented, multimedia personal computers that will provide Internet connections. Contact: Mark Parker, ph: 916.264.2727

The Seattle Public Library, Washington
www.spl.lib.wa.us/
See profile. SPL, Seattle Community Network. Contact: Andra Addison, email: aaddison@spl.lib.wa.us; Bob Mascott, SCN: mascott@scn.org

Seguin-Guadalupe County Public Library, Texas
For those communities too small to support full branch service, a computer with the SGCPL catalog on CD-ROM, placed in a community center or other public building, will afford access to holdings. This will make the books-by-mail services more responsive. Residents can make a free call to the library in Sequin and request a book or information, which would then be mailed to them. When the book is due, it is mailed to the library in the same mailer or returned in person. Contact: Ada Howard, ph: 512.379.1531

Shrewsbury Public Library, Massachusetts
The library is participating in a project that will use grant funds to make the bookmobile a mobile online public access center. Funds also will be used to install fiber optic or cable "access nodes" at four sites. The bookmobile will make a daily scheduled stop of a least an hour at one of these access node sites; a dedicated cable plugged into the node will give the computer terminals on the bookmobile instant, fiber-network access to the main library, a statewide library system of over 100 other libraries, and the Internet. Contact: Thomas Joise, ph: 508.845.4881

Michigan Small and Rural Libraries and the Internet: Three Case Studies
www.sils.umich.edu/~twigs/IPS/analysis.html
The challenges of providing significant electronic networked-based information and library services will be examined in the three small and rural libraries selected for this study. Collaborative efforts and initiatives in these small and rural libraries will be examined as well as others taking place across the state.

San Francisco Public Library
sfpl.lib.ca.us/
The mission of the San Francisco Public Library is to provide its diverse community with free and equal access to information, knowledge, independent learning, and the joys of reading. The library has spearheaded the development of a citywide electronic information resource, using powerful search and retrieval mechanisms that include multimedia technology and networked systems.

Internet Public Library
www.ipl.org/
The IPL provides reference and indices to web documents sponsored by the School of Information and Library Studies of the University of Michigan. This project builds a public library for the Internet community by blending the traditions and culture of libraries and librarianship with the dynamism of the Internet.

Libweb (Berkeley Digital Library SunSITE)
sunsite.berkeley.edu/Libweb/
Libweb's website contains links to library servers that are available via the World Wide Web. The site's contents include international sites, U.S. sites, and related sites (including departments and schools of information studies and World Wide Web library catalog gateways).

St. Joseph County Public Library, SJCPL's List of Public Libraries with Gopher/WWW Services
sjcpl.lib.in.us/Databases/PubLibServFind.html
Since November 12, 1994, this site has been keeping track of public libraries worldwide that either have their own gopher or World Wide Web server, or are serving up documents or information about their library on someone else's gopher or web server. As of February 1997 this list included 19 public libraries on gopher servers, 435 public libraries on World Wide Web servers (U.S. and international), and 3 virtual World Wide Web public libraries.

U.S. Public Libraries on the World Wide Web
www.tiac.net/users/mpl/public.libraries.html
Peter Sylvan of the Milton Public Library in Milton, Massachusetts maintains an annotated list of more than 100 U.S. public library World Wide Websites.

Libraries and community networks

Apache Junction Public Library, Arizona
ajnet.ci.apache-jct.az.us/libtop1.htm
The library provides public access to both AzTec and the Internet. AzTec, Arizona Telecommunication Community Computing, is a freenet developed to provide noncommercial access to information in communities and around the world. The web page includes links to local and federal government agencies, businesses, and Arizona colleges and universities.

Boulder Public Library, Colorado
bcn.boulder.co.us/library/bpl/home.html
The Boulder Public Library (BPL) provides public access terminals (PACs) at all branch libraries. Many terminals offer access to the World Wide Web through text-only Lynx browsers or through graphical interfaces, such as Netscape. Online community information is available through the Boulder Community Network; online library information is available through the CARL System and through ACLIN (Access Colorado Library & Information Network). Boulder Public Library has a Tandem-based wide area network that connects all branches, as well as other municipal libraries in Louisville and Broomfield. BPL has a state-of-the-art classroom for public and staff training sessions. Community Network URL: bcn.boulder.co.us. Contact: Chris Power: powerc@boulder.lib.co.us

Carnegie Library of Pittsburgh
www.clpgh.org
See profile. TRFN URL: trfn.pgh.pa.us. Contact: Susan Holmes, TRFN Project Manager, ph: 412.622.3415, email: holmess@clpgh.org

The Public Library of Charlotte and Mecklenburg County (PLCMC), North Carolina
www.charweb.org
See profile. Contacts: Pat Ryckman, Virtual Library, email: pryckman@plcmc.lib.nc.us; Steve Snow, Charlotte's Web, email: shsnow@charweb.org

Eugene Public Library, Oregon
www.ci.eugene.or.us/Library/default.htm
The Internet Public Access Center (IPAC), on the second floor of the Eugene Public Library, offers free access to library users. There are eight Windows PCs with direct fiber optics connections to the Internet. The IPAC is staffed by volunteers from Oregon Public Networking, one of the city of Eugene's partners in the NTIA grant that partially funded this service. The library offers weekly beginning Internet classes in the IPAC for $15. This three-hour class offers a hands-on introduction to Internet services such as gopher, telnet, FTP, newsgroups, and browsing the World Wide Web using Netscape. Contact: Sarah Rankin, ph: 503.687.5333

Fort Smith Public Library, Arkansas
The Fort Smith Public Library, in conjunction with the local community college, chamber of commerce, hospital, and school system, has been working to establish a community network and to provide Internet access to the community. The backbone will be the local information provided by the public library and the college library—catalogs and CDs that the library will make available for dial-up use. Contact: Patty Zabel, ph: 501.783.0229

The Hamline Branch of the St. Paul Public Library, Minnesota
The Hamline Branch Library offers free public access to the Internet. Financing for the project is provided by the U.S. West Foundation and the Hamline Midway Coalition with funds from the Pew Charitable Trust and The Saint Paul Foundation. Working in partnership with the Hamline Midway Coalition, the Twin Cities Freenet, and The Friends of the Saint Paul Public Library, the library will establish a Community Online Information Center, providing access to numerous databases including information about jobs, government services, housing, licensing, and crime statistics. Two computer workstations will be installed in the library, with dedicated access to the Internet and the Twin Cities Freenet. Contact: Larry Hlavsa, ph: 612.292.6377, email: webmaster@stpaul.lib.mn.us

Leon County Public Library, Florida
www.freenet.scri.fsu.edu
Opened May 5, 1993, using equipment donated by IBM, the Tallahassee Freenet has developed into one of the largest civic networks in the world with over 30,000 registered users with mailboxes and countless unregistered visitors. While Florida State University's Supercomputer Computations Research Institute provides technical support, the library provides a central location in the community, experience in organizing volunteer efforts, office space, telephone lines, a part-time employee, and thousands of dollars in funds. The TFN assists local and state government agencies, schools, businesses, medical centers, and a variety of community projects.

Mendocino County Library, California
The library offers access to computers so that library users may access the Redwood Freenet, which offers community information (such as health and human services), dialogue and debate, as well as Internet email. In addition, the library advocates for seniors through the computer literacy program and uses computers to teach basic learning skills to adult learners. Contact: Henry Bates, ph: 707.463.4491

Riverside Regional Library, Missouri
In partnership with Show-Me Net, and with the help of a $48,800 LSCA grant, the Riverside Regional Library will be offering public access computers in three branches. Contact: Larry Loos, chair, Show-Me Net Organizing Committee, email: loos@mail.mac.cc.mo.us

Santa Monica Public Electronic Network (PEN), California
PEN is a public access computer network designed to provide access to city information and services and facilitate communication between residents and city hall. Usage is free via modem or through 25 terminals located at public libraries, high schools and colleges, community complexes, and senior citizen centers. PEN began in 1989 when Hewlett-Packard donated the equipment for the $350,000 system. The system is controlled by the city's Information Systems Department at an ongoing cost of $100,000 per year.

The Community Networking Page
www.sils.umich.edu/Community/
The mission of the Community Networking Page is to clarify what community networks are and show what benefits they provide; to help users locate CNs; to be a resource for workers, volunteers, members, and supporters of all community information systems, using examples of the creative and useful ways CNs serve and engage their communities; and to provide links to key articles and current CN activities, and resources for sustainability.

Community Networking: Libraries and CNs
www.sils.umich.edu/Community/libraries.html
The closest antecedent to the community network is the pubic library, a public information service traditionally based on books and other paper-oriented media. This page lists public libraries and community networks that have been building alliances, co-sponsoring resources, and in general collaborating in the provision of community information.

Greater Flint Community Networking Initiative
www.flint.lib.mi.us/gfcni/
The Flint Community Networking Initiative is the first community living laboratory funded by the Kellogg CRISTAL-ED proposal. The project aims to create an information infrastructure that will foster a community civic network built on emerging information technologies; provide extensive training to a core group of librarians who will act as trainers of librarians, community leaders, and a cadre of volunteer trainers; develop a sustainable approach to information delivery that is supported by the strengths of the public library (free to all, a public forum; provide a wide variety of resources in an organized way); create a living laboratory which will inform and educate information professionals in the twenty-first century; and revolutionize the way public libraries and the professionals who practice in them provide information to their communities and think about their practice.

La Plaza Telecommunity
www.laplaza.org/

Businesses

Apple Computer, Apple's Library Solutions
www.apple.com/documents/libsolutions.html
The Apple Library of Tomorrow program supports innovative research and demonstration projects in all types of libraries. Its goal is to help libraries with great ideas and limited budgets take some risks and experiment with projects that they could not do without the grants. Donations consist of equipment and software manufactured by Apple Computer, Inc. and third party manufacturers and publishers.

MCI LibraryLINK
www.ala.org/alagoal2000/Linkfina/linkfact.html
MCI LibraryLINK is a three-year, public-private community partnership between MCI and the American Library Association. MCI will donate $750,000 in financial and human resources from 1995 through 1998 to help advance the technological capabilities of the nation's public libraries. More than 24 public libraries will receive MCI LibraryLINK grants. Grants integrate communications technology to enhance the link between local libraries, the communities they serve, and the vast resources of the information infrastructure. The project is administered by the Reference and Adult Services Division of the American Library Association.

Microsoft Libraries Online!
www.librariesonline.org
Libraries Online! is Microsoft Corp's $10.5 million philanthropic initiative to provide assistance to libraries across the nation serving economically disadvantaged communities. The program is in its second year and has expanded to reach 41 library systems in the United States and Canada.

Federal government

Connecting the Nation: Classrooms, Libraries, and Health Care Organizations in the Information Age, *Update 1995, prepared by National Telecommunications and Information Administration, Office of Telecommunications and Information Applications, June 1995.*
www.ntia.doc.gov/connect.html
Connecting the Nation provides a status report on this critical national initiative by drawing from the most current data regarding Internet connectivity, a benchmark for NII access. This report concludes that there is much work to be done before the goal of connecting every classroom, library, and health care organization to the NII is accomplished. Nevertheless, this report highlights how federal government funding can serve as a catalyst in this effort, spurring public-private partnerships even in disadvantaged and remote areas of the country.

IITF: Putting the Information Infrastructure to Work—Libraries and the NII, Draft for Public Comment, 1994
iitfcat.nist.gov:94/doc/Library.html
From the report: "Libraries are central to the success of the NII. Librarians have already begun to explore the challenges presented by electronic materials and navigation tools. Enhanced skills, roles, and alliances in the electronic environment must be explored and developed before the vision of NII digital libraries becomes a reality. . . .While the growth of the Internet has been impressive, the NII is a much more comprehensive, ambitious initiative which necessitates resolving significant issues and meeting critical objectives for libraries as well as other application areas."

IITF: Putting the Information Infrastructure to Work—Libraries and the NII, Summary of Comments, 1994
iitfcat.nist.gov:94/doc/sumlib.html
From the report: "How are we going to get there?
The government's role: funding; facilitation of standards development; providing a testbed; depository library program; policy setting; copyright; industry regulation; education; digital conversion.
Additional issues that must be addressed:
Civil liberties; semantic gateways; organization of data;

preservation; other industry players; equity of access; all digital? library as publishers; algorithmic retrieval; are libraries facing an identity crisis?"

KickStart Initiative
www.benton.org/KickStart/
KickStart is an initiative of the United States Advisory Council on the National Information Infrastructure. Created by President Clinton at the end of 1993, the 36-member council comprised representatives of state and local government, and community, public interest, education, and labor groups—as well as creators and distributors of content, private industry, privacy and security advocates, and learning experts in NII-related fields. The reports were delivered to President Clinton on February 13, 1996.

United States National Information Infrastructure Virtual Library
nii.nist.gov/nii.html
The NII Virtual Library is co-sponsored by the President's Information Infrastructure Task Force and the Council on Competitiveness. This website is being developed by the Office of Enterprise Integration of the National Institute of Standards and Technology. Library Applications of the National Information Infrastructure appears at nii.nist.gov/nii/niiinfo.html.

Policy

Coalition for Networked Information
www.cni.org/home.html
This compilation of information policies brings together in one convenient place the original text of official statements, principles, and laws related to information policy. The initial emphasis has been on policy statements developed by United States-based professional associations in the library and information service and technology community, supplemented by laws and other relevant materials.

KickStart Initiative: Resource on Intellectual Property, Privacy, and Security
www.benton.org/KickStart/kick.privacyresources.html
This section of KickStart has two parts: the first deals with intellectual property and the second with privacy and security. Each part provides basic information about these topics, then offers hypothetical scenarios to illustrate how the ideas apply on the "Information Superhighway."

Harvard Information Infrastructure Project
ksgwww.harvard.edu/iip/
The project began in 1989 with early work on the commercialization of the Internet and information infrastructure as a policy initiative. Over the years, it has provided a neutral, interdisciplinary forum, in both Cambridge and Washington DC, for addressing a wide range of issues. Current work includes digital libraries, electronic commerce and industry, global information infrastructure, intelligent transportation systems, and interoperability and the economics of information infrastructure.

Network Advisory Committee (NAC)
lcweb.loc.gov/nac/
The Network Advisory Committee is sponsored by the Library of Congress to facilitate sharing of information on networking across the various information sectors.

Office for Information Technology Policy (ALA)
www.ala.org/oitp/
The Office for Information Technology Policy is charged with promoting the development and use of electronic access to information as a means to ensure the public's right to a free and open information society.

P. J. Benedict O'Mahoney's Copyright Fundamentals
www.benedict.com/fund.htm
The veteran net surfer is well served by an understanding of the basic tenets of copyright law. This section covers the basics of the ubiquitous copyright notice, what copyright protects, and how long it lasts.

U.S. Copyright Office
lcweb.loc.gov/copyright/
The purpose of this site is to promote the progress of science and useful arts by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.

Research and development

University of California, Berkeley. "The Environmental Electronic Library: A prototype of a Scalable, Intelligent, Distributed Electronic Library"
elib.cs.berkeley.edu/
The U.C. Berkeley Digital Library project's goal is to develop technologies for intelligent access to massive, distributed collections comprising multiple terabyte databases of photographs, satellite images, videos, maps, full-text documents, and "multivalent" documents.

University of California, Santa Barbara. "The Alexandria Project: Towards a Distributed Digital Library with Comprehensive Services for Images and Spatially Referenced Information"
alexandria.sdc.ucsb.edu

Carnegie Mellon University. "Informedia: Integrated Speech, Image, and Language Understanding for Creation and Exploration of Digital Video Libraries"
fuzine.mt.cs.cmu.edu/im/informedia.html
The Informedia Digital Video Library project will establish a large, online digital video library by developing intelligent, automatic mechanisms to populate the library and allow for full-content and knowledge-based search and retrieval via desktop computer and metropolitan area networks. Initially, the library will be populated with 1,000 hours of raw and edited video drawn from video assets of

WQED/Pittsburgh, Fairfax County (Virginia) Public Schools, and the Open University (U.K.). The library will be deployed at Carnegie Mellon University and local K-12 schools.

University of Illinois at Urbana-Champaign. "Building the Interspace: Digital Library Infrastructure for a University Engineering Community"
www.grainger.uiuc.edu/dli
This project proposes to construct a model digital library with a large collection of interlinked documents and databases, and investigate how it can scale up to the National Information Infrastructure.

University of Michigan. "The University of Michigan Digital Libraries Research Proposal"
http2.sils.umich.edu/UMDL/indexes/overview.html
The University of Michigan Digital Library Project is a multi-disciplinary collaboration among faculty and staff throughout the University of Michigan. Initial use and evaluation will take place in science classes in Ann Arbor, Michigan, high schools, and the Stuyvesant High School in New York City, as well as through instruction and research at the university. Access will also be available through Ann Arbor and New York City public libraries. A related project, the Journal Storage Project (JSTOR), will digitize and make available all issues of ten economics journals from their first publication dates through 1990.

Stanford University. "The Stanford Integrated Digital Library Project"
diglib.stanford.edu/diglib/
The goal of the Stanford Digital Library project is to develop the enabling technologies for a single, integrated, and "universal" library. The goal is to provide high level concepts and protocols that can allow users to access information through interfaces that hide the unimportant details of diversity of materials and provide ways to navigate and manage the "information space" in a consistent and unified way.

D-Lib
www.dlib.org/
A forum for news, information, and discussion about research and advanced implementation projects in digital libraries, these activities are coordinated by the Corporation for National Research Initiatives for the Information Infrastructure Technology and Applications Working Group of the High Performance Computing and Communications program. Funding for D-Lib is provided by the Advanced Research Projects Agency (ARPA).

Digital Libraries '95
bush.cs.tamu.edu/dl95/
The Second International Conference on the Theory and Practice of Digital Libraries, June 11-13, 1995, Austin, Texas.

Publishers

Project Muse
muse.jhu.edu/
Project Muse is a Johns Hopkins University initiative involving the JHU Press, Milton S. Eisenhower Library, and Homewood Academic Computing. Funded by the National Endowment for the Humanities and the Andrew W. Mellon Foundation, Project Muse will digitize and make available by electronic subscription all journals of the JHU Press.

HighWire Press
highwire.stanford.edu/
Initial Projects: Science Magazine Online (Published by the American Association for the Advancement of Science), and Journal of Biological Chemistry Online (Published by the American Society for Biochemistry and Molecular Biology).

Miscellaneous

JSTOR (Journal Storage Project)
index2.umdl.umich.edu/help1.html
This project will develop, deploy, and evaluate a digital library capable of supporting the needs of humanities and social science disciplines. The project is run by the University of Michigan's School of Information and Library Studies, College of Engineering, and the University Libraries and the Information Technology Division, with funding from the Mellon Foundation.

Karen's Personal Pages
www.sils.umich.edu/~kschneid/
Information, including Library-Internet Success Stories, compiled by an internet expert and American Libraries columnist.

Print publications

Charles R. McClure, John Carlo Bertot, and John C. Beachboard, *Internet Costs and Cost Models for Public Libraries: Final Report.* (Washington, D.C.: National Commission on Libraries and Information Science, 1995).

Charles R. McClure, John Carlo Bertot, and Douglas L. Zweizig, *Public Libraries and the Internet; Study Results, Policy Issues, and Recommendations.: Final Report.* (Washington, D.C.: National Commission on Libraries and Information Science, 1994).

Public Libraries, Communities, and Technology: Twelve Case Studies. (Washington, D.C.: Council on Library Resources, 1996)

Here are two more must-read resources:

Buildings, books, and bytes
Libraries and communities in the digital age

Americans love libraries . . . but will they follow them into the digital age? A new report prepared by the Benton Foundation and funded by the W. K. Kellogg Foundation reveals what experts—and the public—think. Based on a national public opinion survey and interviews with leading library and information professionals, the report offers some first steps in helping libraries lead their communities into the digital age. But this report is about more than libraries. It's about how the digital revolution is prompting a reappraisal by nearly every institution. It's about the need for new ways to communicate future goals and visions to the public. To order, contact Bonnie Brown at the Benton Foundation, 1634 Eye Street, NW, Washington, DC 20006. Phone: 202.638.5770; Email: beb@benton.org; URL: www.benton.org

The Telecom Toolbox

Libraries for the Future has prepared ***The Telecom Toolbox*** to help library users, who span the public interest spectrum, fight for equitable access to telecommunications at the state level. The packet includes the new state activism version of the ***Library Advocates Guide to Telecommunications,*** a summary of the Joint Board recommendations on universal service, a letter and postcard writing kit, and much more. To get a free copy, participate in LFF's Universal Service Action Alert. To find out how to get involved, contact Libraries for the Future, 121 W. 27th Street, Suite 1102, New York, NY 10001. Phone: 212.352.2330 or 800.542.1918, Fax: 212-352-2342, Email: lff@lff.org; URL: www.lff.org

BENTON FOUNDATION LIBRARIES FOR THE FUTURE